DOCUMENT RESUME

ED 257 961 CE 041 609

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TITLE Southern Research Conference in Agricultural Education Proceedings. (34th, Mobile, Alabama, March 23-25, 1985).
PUB DATE Mar 85
NOTE 278p.
PUB TYPE Collected Works - Conference Proceedings (021) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC12 Plus Postage
DESCRIPTORS Agribusiness; *Agricultural Education; College Graduates; Computer Oriented Programs; *Educational History; *Educational Research; Foreign Countries; Graduate Surveys; Inservice Teacher Education; Job Satisfaction; Job Skills; Mainstreaming; Postsecondary Education; Secondary Education; Student Evaluation; *Teacher Education; *Vocational Education
IDENTIFIERS New Zealand

ABSTRACT

These proceedings include presentations that reflect the conference's focus on reporting current research in agricultural education. Twenty-one papers are presented in six general sessions: "Future Research Needs for Improving Vocational Agriculture Teacher Education Programs" (David L. Williams); "Assessment of Competencies Possessed by Students Enrolled in Applied Principles of Agribusiness and Natural Resources Education" (Jimmy Cheek, Max McGhee); "The Effects of Teaching Method or Student Characteristics on Achievement or Attitudes in an Agricultural Computer Programming Course" (Tim Wiggins); "The Effects of Temperature and Protective Clothing upon Student Perceptions of the Mechanics Learning Environment" (Stanley Burke); "Variables Affecting the Achievement of Students Mainstreamed in Vocational Agriculture" (Oscar B. Potter, J. David McCracken); "Louisiana Vocational Agriculture Teachers' Opinions of In-Service Training" (Joe Kotrlik); "Personal, Organizational and Job Factors as Related to Burnout among Extension Agents in Ohio" (O. Chris Igodan, L. H. Newcomb); "Job Satisfaction of Vocational Agriculture Teachers in Louisiana" (Thomas L. Grady); "State and National Officers' Opinions of State Supervision and Teacher Education in Agriculture" (Joe Kotrlik, Mark Lelle); "Vocational Agriculture Entry-Year Teachers' and Entry-Year Assistance Committee Members' Perceptions of the Oklahoma Entry-Year Assistance Program (HB1706)" (Eddy Finley, Jerry Barbee); "An Experimental Study Involving Ninth Grade Vocational Agricultural Students in the Acquisition of Psychomotor Skills in Arc Welding Utilizing the Theory of Distributed Practice (Bob Drake); "Follow-up of College of Agriculture Graduates at Oklahoma State University: 1979-1983" (David Drueckhammer); "Identifying the Most Important People in the History of Agricultural Education in America" (John Crunkilton, William Camp); "Identifying the Most Important Events in the History of Agricultural Education in America" (William Camp, John Crunkilton); "Prosser, Snedden and Conflicts with Agricultural Education: A Historical Perspective" (John Hillison, William Camp); "In-House Computerized Database Searches" (Joe Kotrlik); "Writing Books and Journal Manuscripts" (John Crunkilton); "On Research Methodology: The Cassette Tape as a Data Collection Medium" (Ismail Yahya, Gary E. Moore); "Land-Grant or Nonland-Grant Universities: Which Produces the Best Vocational Agriculture Teacher?" (C. Cyril Asiabaka, Gary E. Moore), "Technical Animal Science Skills Taught in Vocational Agriculture Classes and Possessed by Illinois Agricultural Production Teachers" (Jim Flowers, Ed Osborne); "Agriculture and Horticulture in the Secondary Schools of the Southern Education Region of New Zealand" (Martin B. McMillion). A reaction paper concludes each general session. Other contents include "Summary Remarks and Challenges" (David L. Williams), and evaluation summary, minutes of the business sessions, articles of agreement, and conference program. (YLB)

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PROCEEDINGS

34TH

SOUTHERN RESEARCH CONFERENCE
IN
AGRICULTURAL EDUCATION

MARCH 23 - 25, 1985
SHERATON MOBILE

MOBILE, ALABAMA

PREPARED BY

WILLIE J. RAWLS, CONFERENCE CHAIRMAN
E. LAMAR LOVE, CHAIRMAN-ELECT
JOHN R. CRUNKILTON, CONFERENCE SECRETARY

FORWARD

Serving as host for the Thirty-Fourth Annual Southern Region Research Conference in Agricultural Education on March 23-25, 1985, was a professionally rewarding experience for Agricultural Education Staff at Land Grant Institutions in Alabama and Tuskegee Institute. Conference participants included teacher educators, graduate students, state supervisors and guests from states in the Central Region.

The primary focus of the Conference was to report current research in Agricultural Education and to enhance the planning, conducting, reporting and implementing of quality research in Agricultural Education. These proceedings include summaries of papers presented and reflect the outcomes of the Conference. A special feature of this year's Conference recognized the most outstanding paper presentation. This award was presented to Jimmy Cheek and Max McGhee of the University of Florida.

We would like to express our appreciation to those who attended and participated in the Conference. A special thanks is extended to the many program participants for their contributions in making this Conference a success, particularly David L. Williams, from the Central Region, who gave the keynote address.

The Conference expenses were met by registration fees and by funds provided for by the Department of Agricultural Education, Fort Valley State College.

We look forward to attending the 1986 Conference to be held in Little Rock, Arkansas.

Willie J. Rawls
Conference Chairman

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"The Effects of Teaching Method or Student Characteristics on Achievement or Attitudes in an Agricultural Computer Programming Course," Tim Wiggins

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"Louisiana Vocational Agriculture Teachers' Opinions of In-Service Training," Joe Kotrlik

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FIRST GENERAL SESSION

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IMPROVING AGRICULTURAL EDUCATION THROUGH RESEARCH*

by

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Introduction

Agricultural education, traditionally, has encompassed vocational agriculture programs in secondary schools, preservice teacher education programs in universities, and state coordination and supervision through state departments of education. In more recent years, inservice teacher education and postsecondary technical agriculture have been included in the agricultural education family. People employed in these areas commonly refer to themselves as "the profession of agricultural education". Webster defines a profession as a vocation requiring a body of knowledge. A profession must have means for verifying existing knowledge and discovering new knowledge. This means that research is an ingredient of all professions, including the agricultural education profession.

The purpose of this paper is four-fold: (1) to emphasize the importance of research in agricultural education, (2) to review progress in agricultural education research, (3) to summarize impact of past research, and (4) to anticipate future research needs to improve vocational agriculture and teacher education programs.

Importance of Research in Agricultural Education

Research is just as important in the agricultural education profession as teacher education or state supervision. Evans and Terry (1971) suggest that it is not enough for a profession to merely keep up with the changes which are occurring, it must stay ahead of the changes. For this to happen, information presently lacking must be systematically collected, analyzed, reported and applied by practitioners in the professions. The practitioners in the agricultural education profession are local teachers, teacher educators and state department personnel; you and me. We should all be consumers of research; and in many cases, we are also the researchers.

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*A paper presented as the keynote address at the Southern Region Research Conference in Agricultural Education, Mobile, Alabama, March 23, 1985.

Willie Rawls shared with me the theme for this conference when he asked me to be the keynote speaker. "Future Research Needs for Improving Vocational Agriculture and Agriculture Teacher Education" is a commendable focus for this research conference. The theme implies that research is an important tool for future improvement in the profession. I agree and encourage you, collectively and individually, to plan and conduct research in agricultural education to:

1. verify existing knowledge,
2. solve problems,
3. discover new knowledge,
4. provide direction for the future,
5. identify and compare progress, and
6. determine methods of applying knowledge at local, state, national and international levels.

Progress in Agricultural Education Research

Research as a component of the agricultural education profession has grown and matured in the past decade. Evidence of this growth includes (1) increasing the quality and quantity of research conducted, (2) publishing of a quality research journal, (3) conducting regional and national research conferences, (4) awarding outstanding researchers, and (5) recognizing agricultural education as a discipline. Let us take a closer look at each of these.

Quality and Quantity of Research

The research in agricultural education has been reviewed and synthesized periodically since 1966 (McCracken, 1982). J. David McCracken (1982) identified the following positive developments in agricultural education research:

1. Programmatic focus is being used in topical areas.
2. Unique aspects of agricultural education are being investigated, including supervised occupational experience (SOE), the Future Farmers of America (FFA), summer programs, the teacher as a community agriculture leader, and problem-solving as an approach to teaching.
3. Use of diverse methods, including experimental research.
4. More research being conducted by university faculty members.
5. Focus on critical problems facing the profession.

In addition to an improvement in the quality of research in agricultural education, the quantity has increased. Annual regional and national research meetings have moved from one to multiple sessions to allow time for reporting of an increasing number of quality research efforts.

Research Journal

All professions need a vehicle for continuous communication of new knowledge among its members. The Journal of the American Association of Teacher Educators in Agriculture is the research communication vehicle in agricultural education. A 1981 readability survey of the journal revealed that it is used to learn about research findings and to help people develop professionally. Readers indicated that they liked the journal because it "keeps them up to date." Readers also indicated that the journal should be expanded in terms of number of issues per year and the number of articles per issue. These recommendations have been implemented. Agricultural education has a high quality research journal serving the profession.

Research Conferences

The agricultural education profession conducted its eleventh annual national research meeting last November in New Orleans. The meeting featured four concurrent sessions for reporting of refereed research papers. Each of the four concurrent sessions was attended by more people than the total attendance at the first national research meeting just eleven years before. This same type of growth is being experienced at regional agricultural education meetings. National and regional research meetings enhance dissemination of research findings and serve as a fountain of verified and new knowledge for the agricultural education profession.

Recognition of Researchers

It is an honor for researchers to have their work published in a refereed journal. It is an indicator of quality work on a topic that is important to the profession. The American Association of Teacher Educators is to be commended for establishing the Author of the Year Award. This award, which was given for the first time in 1983, provides recognition for exemplary published research. This award identifies articles and authors to serve as models for the profession.

Agricultural Education is a Discipline

Progress has been made in recent years in defining the mission of agricultural education at all levels. This is especially true at the university level. Agricultural education is teaching, research and extension, the three commonly recognized functions of a land grant university. Agricultural education is a discipline with a unique contribution to make. Agricultural education is committed to the proposition that agricultural knowledge can best be understood when presented through proven formal and nonformal instructional techniques and problem solving situations. The discipline emphasizes the process of educating youth and adults (pedagogy and andragogy) in agriculture and the search for and creation of facts and understandings (basic and applied) that will expand and refine that knowledge. Agricultural education gives special attention to refining, packaging, demonstrating, and making knowledge usable (professional and technical), and the dissemination, utilization, and application of this knowledge by a variety of audiences in various settings. (Iowa State University, 1983).

A move is now underway in the northcentral region to gain recognition for agricultural education as a research area by the Association of Directors of State Agricultural Experiment Stations. A request is being made to establish an Advisory Committee for Agricultural Education within this group. Approval of such a committee would recognize agricultural education as a research discipline along with agronomy, animal science, sociology, economics and other major disciplines in agriculture; and provide an avenue for potential funding of regional agricultural education research.

Impact of Past Research

One way to predict future research needs in agricultural education is to examine past research and the impact of that research on accomplishing program goals. The ultimate aim of research in agricultural education should be to provide knowledge that will permit professionals to achieve their goals by the most effective means. Has past research helped agricultural education reach its goals? Perhaps this question can be answered in part by taking a look at past research efforts in areas McCracken (1982) identified as unique aspects of agricultural education:

Curriculum. Research on curriculum development has been a major focus since the mid 1970s. Research has identified generic competencies performed by agricultural workers which have applicability across occupation, and competencies for many specific occupations. Research in this area has resulted in the development of core curriculum for vocational agriculture in several states.

Supervised Occupational Experience (SOE). Research findings verify the general beliefs that SOE is an integral and important component of vocational agriculture. Comprehensive and programmatic research efforts related to SOE development fueled the planning and conducting of two national workshops focusing on SOE, one in 1982 and another in 1984. These research and development efforts placed a renewed focus on SOE as a unique and important learning tool for vocational agriculture students.

The FFA Organization. Research on the FFA has ranged from relevance of the organization for all students to the effectiveness of the FFA organization. In general, the research relating to the FFA has focused on describing activities that can be used to improve vocational agriculture programs.

Summer Programs. Research on summer programs is a unique aspect of vocational agriculture that has received only limited attention. Research shows that teachers, administrators, teacher educators and state staff perceive summer programs as important.

The Vocational Agriculture Teacher. The shortage of certified vocational agriculture teachers in the 1970s spurred research relating to the work of the vocational agriculture teacher. Research in this area focused on time utilization, job satisfaction and reasons why teachers leave, return and remain in teaching. These findings have been used in the development of recruitment programs and in planning teacher education programs.

Inservice Teacher Education. Research has identified the needs of both secondary and postsecondary teachers. Some attention was also given to who should provide inservice education for vocational agriculture teachers. The problems and concerns of beginning secondary teachers have been examined. These findings have directed inservice teacher education programming in several states.

Yes, research has helped agricultural education reach important goals in the past decade, especially in the areas of curriculum development and SOE. Perhaps research and development in these two areas should serve as models for other areas in the future.

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Researchers and practitioners in agricultural education have worked together to make vocational agriculture a highly effective and respected educational program. Rosenfeld (1984, p. 29) used the following words in recommending vocational agriculture as a model for education reform: "Vocational agriculture characteristically includes many of the activities and approaches currently recommended for the improvement of secondary education in general: training for leadership and entrepreneurship, longer periods of time devoted daily to education, a problem-solving approach to learning, higher-quality teachers, and greater cooperation with the private sector. There is little doubt that it has been effective for agriculture in the past and has contributed to the phenomenal growth in American agricultural productivity since the turn of the century when these programs began."

Future Research Needs

It was deducted earlier that research should be guided by program goals. So, to guide our thinking about future research needs for improving vocational agriculture programs and agriculture teacher education programs, we must ask ourselves: What are the goals for these programs in the next ten years? Please rest assured that I am not going to attempt to answer this question. However, I cannot avoid the temptation of sharing some changes I see on the horizon for vocational agriculture and the corresponding needs for future research. One must approach the topic of predicting future research needs with caution. There is a Chinese proverb that goes something like this, "Be careful about making predictions, especially ones about the future."

Focus on Business Management

More attention must be given to teaching farm business management at the secondary, postsecondary and adult levels in the future. What should be taught and what methods should be used in teaching business management principles? What methods will help people learn to make sound financial decisions? How can computerized information systems be used in teaching business management? How can we prepare present and future farmers and agribusiness people to perform business functions in a global economy? Answers to these questions will require creative and complex answers for both vocational agriculture and teacher education programs.

Adapting the Model

Vocational agriculture must become recognized as a program that produces not only productive, well-educated farmers and agribusiness employees, but also future employers and owners in the industrial and service sectors of agriculture. What adaptions will be needed in the program's content and methods (classroom-laboratory instruction, FFA and SOE) to meet these expanding goals? Because of new and emerging occupations in agriculture and rapid changes in technology, the need for research in these areas is continuous.

Middle School Exploration Programs

The secondary vocational agriculture teachers cannot wait for students interested in agriculture to come to them. There will be fewer and fewer students with an agricultural background in the future. The agricultural education profession must be aggressive in developing ways and means to develop student interest in agriculture. Conducting effective exploratory programs for seventh and eigth grade students must be a future goal of vocational agriculture programs. Title II of the Carl Perkins Act of 1984, identified agriculture as one of the 24 areas where federal funds could be used to improve and expand vocational education. This movement identifies research needs for content and methods at another level of education, the middle or junior high school.

Teaching Basic Skills in Vocational Agriculture

The Unfinished Agenda: The Role of Vocational Education in the High School (1984, p.25) stated that "Secondary vocational education courses should provide instruction and practice in the basic skills of reading, writing, arithmetic, speaking, listening and problem solving." What is the role of vocational agriculture in developing these basic skills? How can vocational agriculture contribute to the excellence movement? What competencies should a teacher have to integrate the practice of basic skills into vocational agriculture instruction? These questions will need to be the focus of future research.

Teacher Preparation

The creation and implementation of systems for documenting and assessing the experiences and abilities of new teachers is expected to continue. Comprehensive descriptions and analyses of the academic abilities, teaching skills, and professional attitudes of university students in preservice teacher education and beginning teachers are being mandated in many states. Alternative ways of preparing teachers and certification of teacher competency will be appropriate research topics in the years ahead.

FFA

Is FFA of educational value? Do we have empirical evidence with which to answer this question? Harry Silberman (1983) identified three outcomes for secondary school vocational education programs: (1) development of technical skills and knowledge, (2) development of communication skills and literacy, and (3) development of personal skills and attitudes. Most of us in this room believe that the FFA should be added to "motherhood, Chevrolete and apple pie" as things that are great in the U.S.A. We believe that FFA does develop marketable skills, especially communication and personal skills. However, our feelings about a method used in vocational agriculture may not be enough to justify its continued use, evidence of effectiveness and value will be required.

Cooperation with Industry

The National Academy of Sciences publication, entitled "High Schools and the Changing Workplace: the Employers' View," suggested several roles employers can play in preparing young people for future careers. Cooperation with industry can improve the image of vocational agriculture as being relevant to today's work world. Industry can help integrate high technology into school programs and help education emphasize aspects of programs which are highly transferrable across occupations in agriculture. Research and development activities must provide direction to achieve the goal of expanded cooperation between vocational agriculture and industry.

Integrated Systems Approach

Scientific subject matter, high technology, and computerized communication systems must be integrated with methods of teaching and learning to deliver viable vocational agriculture programs in the future. At the local level, vocational agriculture teachers must learn how to involve producers, industry, agricultural lenders, county extension agents and other professionals in designing educational programs. At the university level, agricultural education departments must work more closely with technical agriculture departments, industry and educational specialists in the delivery of preservice and inservice teacher education. These movements will provide opportunities for cooperative research efforts between agricultural education and other departments and agencies.

Summary

Vocational agriculture has been identified as a model for educational reform. This exemplary educational program is a product of researchers and practitioners working together in a profession. As new goals are set for vocational agriculture and teacher education, programmatic research efforts will be needed to guide the way to achieving these goals. Future research programs must be guided by high standards and directed by high-caliber research personnel. The future of the agricultural education profession depends upon the relevance and quality of its research.

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A DISCUSSION OF THE KEYNOTE ADDRESS*

John T. Denmark
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State supervisors represent a variety of educational systems and operational structures. The degree of control or influence over educational research funds at the state level will vary. However, on behalf of my colleagues, I feel confident in saying that funds for vocational research at the state level are extremely limited and result in competition among the vocational disciplines. Therefore, many research projects granted by the states are multidisciplinary in nature and do not target specific disciplines such as vocational agriculture. With funds being limited from state vocational sources, other sources of funds must be sought to maintain viable vocational agricultural research programs at the University level. Dr. Williams referred to a move underway in the North Central region to gain recognition for agricultural education as a research area by the Association of Directors of State Agricultural Experiment Stations. Funding research for vocational agriculture through extension is a new concept to many Extension Research Deans. State supervisors can and should exert an effort to encourage this type of cooperation.

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*A discussion paper presented at the Thirty Fourth Annual Research Conference in Agricultural Education, Mobile, Alabama. March 23-25, 1985

The impact of past research can be illustrated by describing the resolution of a mandate by the Florida Legislature. The Legislature required that Florida develop curriculum frameworks and student performance standards for each program/course offered. The problems was further compounded by additional legislation requiring that vocational programs/courses be reported as secondary, post-secondary adult, and post-secondary. This necessitated the creation of new course titles, resulting in fifty-one different titles for vocational agricultural courses. To accomplish this task, competencies from national standards developed as a nationwide research project were used as the basis for developing the student performance standards. While reviewing a number of student performance standards from other states it was obvious that the same document had been used in their developmental process.

Research must play a key role in the future of vocational agricultural education. With national, state and local education commissions studying vocational education from every conceivable angle, it is time for the "profession" to assert a positive influence in stabilizing vocational agriculture. Whatever direction vocational agriculture must take, I am convinced it must be based on thorough research.

I agree with Dr. Williams that business management must be given more attention. I also agree that the middle school programs need to be addressed, along with post-secondary and post-secondary adult programs. For too long we have merely extended the concept of the secondary program in both directions without addressing the particular needs of either group.

SECOND GENERAL SESSION

Carlton Morris - Presider
Tuskegee Institute

Jasper A. Hayles - Facilitator
Arkansas State University

Gary Moore - Reactor
Louisiana State University

II

Assessment of Competencies Possessed by Students Enrolled in Applied Principles of Agribusiness and Natural Resources Education

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Assessment of Competencies Possessed by Students Enrolled in Applied Principles of Agribusiness and Natural Resources Education

Introduction

Currently, a great deal of attention is being given to the concept of educational accountability. In this atmosphere, legislators, educators, and the general public are asking if expenditures for vocational education are producing desired results. Funding agencies, too, are asking for evaluative information upon which policy decisions are based. Effective evaluation is vital for improving educational programs since it makes it possible to determine the merits of existing programs, the need for new programs, or the need for revision of existing programs. However, based on a review of a report to the Governor of Florida, and similar reports in other states, it is obvious that sufficient data substantiating the effectiveness of vocational education is not available (Governor's Commission on Secondary Schools for the State of Florida, 1983).

One measure of the effectiveness of a curriculum is the performance of students. The assessment of student mastery of skills and knowledge may also be a measure of teacher effectiveness. Thus, tests provide an indication of how much is being learned in an instructional program and how well the objectives are being mastered. In order to properly use student tests as a measure of program effectiveness, a set of measurable objectives must be developed. These objectives should be based upon competencies that industry recognizes as necessary for employment. Consequently, one measure of program effectiveness is the extent to which students completing an instructional program possess or fail to possess the competencies specified in the instructional objectives. Therefore, test information cannot only be used to evaluate program effectiveness, but can also be used to evaluate the students' mastery of instructional objectives (Glasser and Nitko, 1971). Tests composed of items keyed to a set of specific measurable objectives are termed criterion-referenced tests (Ivens, 1970).

In order to have valid criterion-referenced tests of the competencies possessed by students enrolled in Applied Principles of Agribusiness and Natural Resources Occupations (hereafter referred to as Applied Principles) in Florida, Cheek and McGhee (1983, a, b, c, d, e, f) conducted a series of projects to develop such measures. As a result of their activities, test item banks were developed for the major content areas of the Applied Principles. Selected items from the banks relative to the Applied Principles program were used in the present study to assess student mastery of competencies. Applied Principles is designed to be taught at the tenth grade level for one hour of instruction per day for the entire school year. Students who enroll should have completed Fundamentals of Agribusiness and Natural Resources Occupations in the ninth grade.

Purpose

The purpose of this study was to assess the level of mastery of Florida students enrolled in the Applied Principles program. In order to achieve this purpose, the following objectives were developed as guidelines for conducting the research:

1. Determine the level of mastery of currently enrolled vocational agriculture students on the Applied Principles Achievement Test (APAT).
2. Compare students' level of mastery on the APAT according to the following:
   A. Current grade in school.
   B. Previous enrollment in agricultural classes.

C. FFA membership.

D. Involvement in the supervised occupational experience program.

E. Career plans.

3. Determine whether competencies identified in the state curriculum guide for Applied Principles were being taught by the teachers.

Research Procedure

The population for the study were schools in Florida where Applied Principles courses were taught during the 1982-83 school year. The five Department of Education regional consultants for agribusiness and natural resources education were contacted and asked to identify the schools in which Applied Principles was being taught and the names of the teachers teaching the course. This resulted in a list of 127 teachers who were offering Applied Principles. Each identified teacher was contacted to determine if they would be willing to administer the APAT to their students. Fifty-two teachers indicated that they would be willing to administer the test to their students and they identified 1587 students to whom the test might be administered.

Applied Principles consists of three instructional components, each designed to utilize one-third of the school year. All students complete the common core component which consists of agricultural business management, agricultural mechanics, and leadership and citizenship development; then, instructors select two specialized components from the following taxonomies: agricultural mechanics; agricultural production; agricultural resources; forestry; and ornamental horticulture. Because of this, 6 component tests of 20 questions each were constructed and various test combinations were administered depending upon the components an instructor taught.

Questions comprising the criterion-referenced test related to competencies identified in the State Curriculum Guide (Panhandle Area Education Co-operative and Florida Department of Education, 1980). Test questions were selected from test item banks developed by Cheek and McGhee (1983 a, b, c, d, e, f). Items were selected using the following criteria: an item discrimination index greater than 0.30 which indicates that the item can discriminate between students who do poorly on the test from those who obtain high scores and an item difficulty between .50 and .80. Item difficulty is a measure indicating the proportion of students who correctly answer an item.

The mean item discrimination for test questions included on each of the component tests were: Common Core .61; Agricultural Production .56; Ornamental Horticulture .52; Agricultural Mechanics .30; Forestry .51, and Agricultural Resources .49. The mean item difficulties for each component tests were: Common Core .65; Agricultural Production .61; Ornamental Horticulture .56; Agricultural Mechanics .38; Forestry .61; and Agricultural Resources .74.

Reliability of each item bank of questions was determined by calculating a Kuder-Richardson 20 correlation coefficient. The Kuder-Richardson 20 correlation coefficients for each of the components were as follows: Common Core .89; Agricultural Production .80; Ornamental Horticulture .89; Agricultural Mechanics .77; Forestry .88; and Agricultural Resources .94.

In addition to the test items designed to assess performance in Applied Principles, five additional items sought demographic information concerning the students. A teacher questionnaire was developed to obtain data necessary to accomplish objective three. The questionnaire was designed to determine whether or not each of the competencies identified in the State Curriculum Guide were included by teachers in their Applied Principles course.

Data for this study were collected from 44 teachers and 1039 students. To analyze data related to objective one total mean scores were computed for

Table 1
Achievement of Students on the APAT

Component	Mean Raw Score	Number of Questions	S.D.	N	Percentage Score
Core	12.35	20	4.08	1038	61.75
Agricultural Business Management	4.27	7	1.61	1038	61.00
Agricultural Mechanics	3.92	7	1.83	1038	56.00
Leadership and Citizenship	4.17	6	1.71	1038	69.50
Agricultural Production	11.14	20	4.10	823	55.70
Ornamental Horticulture	8.81	20	4.43	633	44.05
Agricultural Mechanics	8.25	20	3.22	380	41.25
Forestry	8.11	20	3.21	190	40.55
Agricultural Resources	10.06	20	3.36	34	50.30
Total Test	31.37	60	10.81	1039	52.28

Current Grade in School

Students completing the APAT were asked to indicate their current grade in school. Data indicated that the vast majority (66.3%) of the students were in the tenth grade, 19.2% were in the eleventh grade, 10.0% were in the twelfth grade, and 4.50% were in the ninth grade.

The total mean scores and standard deviations for the various grade in school categories of students taking the APAT are presented in Table 2. The scores ranged from a high of 34.05 for students in the 11th grade to a low of 25.76 for the 9th grade students. A one-way analysis of variance was computed to determine if there were significant differences in the mean scores of students on the APAT for the various grade levels, resulting in an F value of 7.28, which was significant at the .0001 level. Duncan's multiple range test was used to determine where significant differences lay. As indicated in Table 2, significant differences existed among mean score for ninth grade students and the mean scores of tenth, eleventh, and twelfth grade students. There were no significant differences among the mean scores of tenth, eleventh, and twelfth graders.

each component of the APAT and the total test. Descriptive statistics were used to summarize each of the five demographic variables in objective two. One way analysis of variance was used for students' mean scores on the APAT when considering grade in school and career plans. The t-test was used in objective two to determine whether or not differences existed in students' mean scores on the APAT with respect to previous enrollment in agricultural classes, FFA membership, and involvement in supervised occupational experience programs. Descriptive statistics were used to analyze data in objective three.

Results

Student Achievement

Data presented in Table 1 illustrates that students had the highest mean scores on the core component 12.35 (61.75%) followed by agricultural production 11.14 (55.7%), agricultural resources 10.06 (50.30%), ornamental horticulture 8.81 (44.05%), agricultural mechanics 8.25 (41.25%), and forestry 8.11 (40.55%). The common core component was composed of three sub-components: agricultural business management; agricultural mechanics; and citizenship and leadership. It was found that students performed best on the leadership and citizenship portion of the test and poorest on agricultural mechanics. In order to determine how students performed on the APAT, regardless of component, a total test score was derived. The mean total raw score was 31.37 (52.28%) with a standard deviation of 10.81 which indicates that two-thirds of the students had a mean score somewhere between 20.56 (34.27%) and 42.18 (70.03%).

.05 level of significance as the critical standard was used. The t-test resulted in a t-value of 3.93 which was significant at the .0001 level. Students who were FFA members scored significantly higher (33.42) than those who were not FFA members (30.32).

SOEP Involvement

Students were asked if they had a supervised occupational experience program (SOEP). Almost two-thirds (64.8%) of those responding indicated that they did have an SOEP while the other one-third (35.2%) did not. The t-test was used to determine if students with an SOE had significantly different mean scores on the APAT than students without an SOE. Data indicated that students with an SOE had significantly higher mean scores (33.48) than students who indicated that they did not have an SOEP (30.92). The t-test resulted in a t-value of 3.50 which was significant at the .0005 level.

Career Plans

Students were asked to indicate their post high school career plans. Data in Table 3 reveal that the students who planned to attend college or pursue other post-secondary education and students who were unsure of what their plans were, comprised the largest proportion (31.77 and 27.10%, respectively) of the respondents. Only 17.95% of the students indicated plans to enter an agricultural occupation directly from high school. The military was indicated by 15.34% of the students as being in their future career plans. The smallest proportion (7.84%) of the students indicated that they planned to work in a non-agricultural occupation.

The total mean scores and standard deviations for the various categories of career plans of students completing the APAT are also presented in Table 3.

Table 2
Mean Score on APAT According to Grade in School

Current Grade in School	Number	Mean Score*	Percentage Score	Standard Deviation
9th	41	25.76B	42.9	9.34
10th	604	32.08A	53.5	10.25
11th	175	34.05A	56.8	11.23
12th	91	33.14A	55.2	10.59

*Mean scores with the same letter are not significantly different at the .05 alpha level.

Previous Enrollment in Agriculture

In response to the question of whether they had been in an agricultural class prior to the current year, 77.5% of the students indicated that they had previously been in an agricultural class while 22.5% indicated that they had not been enrolled. The t-test was used to determine whether significant differences existed between the mean scores of these two groups on the APAT with the .05 level of significance as the critical standard. The data revealed that there was no significant difference between mean scores of students who had and students who had not previously been enrolled in an agricultural class. The t-test resulted in a t-value of 1.47 which was not significant at the .05 level. The mean score for previously enrolled students was 32.78 which was just slightly higher than the score of 31.55 for students who had not previously been in an agricultural class.

Membership in FFA

Almost three-fourths (74.5%) of the students completing the APAT indicated that they were members of their schools' FFA chapter, while 25.5% were not. To determine whether there were significant differences between mean scores on the APAT according to membership in FFA, the t-test with a

The scores ranged from a high of 34.29 for students planning to attend college to a low of 28.61 for individuals planning to enter a non-agricultural occupation.

Table 3
Career Plans After Graduation and Mean APAT Score According to Career Plans

Career Plans	Number	Percent	Mean Score*	S.D
Agricultural Occupation	165	17.95	32.51AB	10.37
Non-Agricultural Occupation	72	7.84	28.61C	10.63
College/Post High School Education	292	31.77	34.29A	10.15
Military	141	15.34	30.35BC	11.37
Unsure	249	27.10	30.91BC	10.44

*Mean scores with the same letter are not significantly different at the .05 alpha level.

A one-way analysis of variance was computed to determine if there were significant differences among mean scores on the APAT by the five categories of career plans. The analysis of variance resulted in an F value of 6.99, which was significant at the .0001 level. Duncan's multiple range test was used to compare the mean scores for the five categories of career plans. The mean APAT score of students who planned to attend college or post-secondary school were significantly higher than the scores of students who were unsure of their career plans, or those who planned to enter the military, or those who planned to enter a non-agricultural occupation. In addition, those who planned to enter a non-agricultural occupation scored significantly lower than students planning to enter an agricultural occupation or attend college or post-secondary school.

Competencies Taught

The third objective was designed to determine whether or not the competencies identified in the Applied Principles Curriculum Guide were actually being taught

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by teachers participating in this study. Only teachers teaching a specific curriculum component were asked to respond to the competencies related to that component. Thus, each teacher responded to the common core component and two specialized components.

Data in Table 4 identify the degree to which the 140 competencies included in the Curriculum Guide were being taught by the teacher respondents in this study. The data revealed that 65 (46.5%) of the competencies were taught by 75 - 100 percent of the teachers who taught a specific program area. Fifty-one competencies (36.4%) were taught by 50 - 74.9% of the teachers. Nineteen competencies (13.5%) were included in the program of 25 - 49.9% of the teachers and five (3.6%) of the competencies were taught by 0 - 24.9% of the teacher respondents.

Table 4
Degree to Which Applied Principles Competencies are Being Taught by Teachers

Percent of Teachers Teaching the Competency	Number of Competencies	Percent of Competencies
0 - 29.9	5	3.6
30 - 49.9	19	13.5
50 - 74.9	51	36.4
75 - 100	65	46.5
Total	140	100.0

Data were also examined to determine the degree to which the competencies identified in the State Curriculum Guide were being taught by 75% or more of the teachers. Data in Table 5 reveals that 75 to 100 percent of the teachers taught 48.2 percent of the core competencies, 35.3 percent of the agricultural mechanics competencies, 75 percent of the ornamental horticulture competencies, 52.4 percent of the forestry competencies, 25 percent of the agricultural production competencies, and 58.3 percent of the agricultural resources competencies. A common core

2. Students in the tenth, eleventh, and twelfth grade score significantly higher on the APAT than did ninth graders.
3. There was no significant difference between mean score on the APAT for those students who were previously enrolled in an agricultural class and those who were not.
4. Students taking the APAT who were currently members of the FFA scored significantly higher on the APAT than students who were not in FFA. In addition, those involved in SOE scored significantly higher on the APAT than those who indicated no involvement with SOE.
5. Students who planned to attend college or post-secondary school scored significantly higher on the APAT than students who were unsure of their career plans, or those who planned to enter the military, or those who planned to enter a non-agricultural occupation. There was not a significant difference between students who planned to enter an agricultural occupation and those with plans for post-secondary school education. In addition, those students planning to enter an agricultural occupation scored significantly higher than those students planning to enter a non-agricultural occupation.

Recommendations

Based upon the findings and conclusions of this study, the following recommendations are made:

1. This study indicates that less than 50% of the competencies specified in the Applied Principles Curriculum Guide were being taught by 75% or more of the teachers and the percentage test score on the APAT was approximately 52%. The statistics raise several questions such as: Are teachers teaching what should be taught? Are students

sub-component of leadership had the highest proportion (78.3%) of the competencies being taught by 75% or more of the teachers.

Table 5
Percentage of Competencies by Instructional Component
Identified by 75% or More of Teachers as Being Included
in the Applied Principles Program

Component	Total Number of Competencies	Number of Competencies Identified by 75% or more of the Teachers	Percent
Core	54	26	48.2
Agricultural Business Management	14	2	14.3
Agricultural Mechanics	17	6	35.3
Leadership	23	18	78.3
Agricultural Mechanics	17	6	35.3
Ornamental Horticulture	12	9	75.0
Forestry	21	11	52.4
Agricultural Production	24	6	25.0
Agricultural Resources	12	7	58.3
Total	140	65	46.4

Conclusions

The following conclusions were drawn from the findings of this study:

1. Based upon the performance of students on the APAT, student mastery of the Applied Principles curriculum was slightly over 52%. This indicates that the average student had learned approximately 52% of the curriculum as prescribed by the Curriculum Guide. Additionally, it was concluded that less than 50% of the competencies specified in the Curriculum Guide were being taught by teachers.

learning what they should learn? Does the State Curriculum Guide reflect what should be taught? If the Curriculum Guide does reflect what should be taught, why are teachers not teaching the competencies specified? Further study should be conducted to determine answers to these questions.

2. Emphasis should be given to strengthen instruction in Applied Principles. Strategies for strengthening this program might include but is not limited to: (1) a review of the Applied Principles Curriculum Guide by teachers, advisory committee members, regional consultants, vocational directors, teacher educators, and others to make certain that the competencies contained therein are appropriate; (2) inservice educational activities designed to improve the competencies of teachers related to the instructional components of Applied Principles; (3) special attention by Department of Education regional consultants for vocational agriculture during the program review process to note deficiencies related to competencies not included in the instructional program; (4) increase attention at the pre-service level to emphasize the structure of Applied Principles and the competencies to be taught; (5) and the development of instructional materials to assist teachers in teaching the competencies included in the Curriculum Guide. In addition, an effort should be made to determine if appropriate facilities and equipment are available to teach the competencies specified in the Curriculum Guide.

3. Teachers of agriculture who teach Applied Principles should encourage all students to be members of the FFA chapter and to become actively involved with appropriate supervised occupational experiences. This recommendation is made because of the significantly higher mean scores

on the APAT by students who were FFA members and who also indicated involvement with supervised occupational experiences.

4. A study should be designed to assess students' level of mastery of the competencies that teachers indicate they are including in the Applied Principles program.
5. Other researchers should conduct similar research in other states to provide empirical evidence which further describes the outcomes of vocational agriculture programs.

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The Effect of Teaching Method or Student Characteristics on Achievement or Attitudes in an Agricultural Computer Programming Course

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INTRODUCTION

The microcomputer has recently metamorphosed from a machine used strictly for number crunching into the newest of educational aids to be used in the agricultural classroom. The rapid adoption of the microcomputer into agribusinesses, farms, and agricultural classrooms has created a need to train students, educators, and adults already involved in agriculture and agribusiness on microcomputer usage.

> "Just as the producer who knows the principles of tractor operations is in a better position to make tractor-related decisions, so is the computer-literate agriculturalist better able to use the microcomputer. The implication is that as the use of computers on farms and ranches increases, students in Colleges of Agriculture will need to understand how computers can be used in Agriculture" (Legacy et al., 1984, p.254).

The body of knowledge relative to computer usage is, at present, very small. For the computer to be used effectively as an educational tool, this body of knowledge must be further developed. As noted by Borg and Gall (1983), "The major reason for educational research is to develop new knowledge about teaching and learning and administration. The new knowledge is valuable because it will lead eventually to the improvement of educational practice." However, current research concerning the computer as an educational tool is limited.

The vast majority of research that has been conducted to date has delt with differences in student achievement and attitudes relative to different teaching methods. Russell (1984) concluded that there was no significant difference between student posttest scores on farm management and agricultural marketing concepts when taught by computer-assisted instruction and the conventional teaching method.

Rota (1981) found no significant difference in student achievement and attitude toward computers and computer-assisted instruction for students taught by traditional-lecture instruction, computer-assisted instruction, and lecture information supplemented with computer-assisted instruction. Research by Tsai and Pohl (1978) in a university undergraduate computer programming class revealed no significant difference in student learning achievement among three teaching methods; lecture instruction, computer-assisted instruction, and lecture supplemented with computer-assisted in[illegible]

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Broh (1975) found no significant difference in achievement in political science, methodological concepts, and computer techniques for students taught by lecture and computer-assisted instruction.

Rice (1973) concluded that there was no significant difference between traditional instruction, computer-assisted instruction, and programmed packets for the concepts taught in a college freshman calculus class. Friesen (1976) found that students with good prior achievement in mathematics had higher achievement and attitude scores under both lecture-discussion and computer-assisted teaching methods . Kockler and Netusil (1974) determined that attitudes towards computer-assisted instruction improved significantly for students using CAI but not for the students taught by the conventional lecture method. They also found no significant difference between the two groups in attitude toward mathematics or in mathematics achievement.

The above examples of research, and most of that conducted to date, are all relative to the results of using the computer as a teaching tool. Very little research has been conducted on other factors that directly affect the development of skills, achievement, or attitudes relative to computer usage in agriculturally related fields, or in any other field. In order for agricultural educators and other professionals to use the computer as a learning tool, these factors need to be identified.

OBJECTIVES OF THE STUDY

This study was done to identify factors that affect student achievement or attitude in a BASIC computer programming course in the Agricultural Engineering Department at Iowa State University. The specific objectives were to determine if there was a significant difference:

1. In student achievement when using computer-assisted instruction as compared to traditional instructional methods.
2. In student achievement or attitude when comparing teaching methods or 28 different student characteristics.
3. In student achievement when comparing student attitude.

METHODOLOGY

A pretest-posttest experimental/control group design was used with the degrees of freedom determined by the number of categories for each test. The treatment group received computer-assisted instruction and the control group received traditional lecture-instruction. Student achievement was measured with a pretest-posttest knowledge examination while student attitude toward computers and computer use was measured with a pretest/posttest attitude inventory. Student characteristics were obtained using a demographic survey administered at the beginning of the course. All instruments were pilot tested during summer semester, 1983.

The population consisted of the students in the College of Agriculture, and the sample was the students enrolled in the Agricultural Mechanization 180X course during two successive semesters (Fall, 1983 and Spring, 1984) at Iowa State University. The classes were randomly assigned to an experimental or control group, for a total of 61 students in the control groups and 42 students in the experimental groups. The instructors taught experimental as well as control groups.

An analysis of covariance was used to measure statistical differences with the pretest mean score as the covariate.

Cronbach's Coefficient Alpha was used to obtain an item analysis on the individual questions for the knowledge test and attitude inventory. The reliability coefficient ranged from .79 to .90.

RESULTS

Student Characteristics Findings

The following summarize the major computer-related characteristics obtained from the demographic survey:

a. over 70 percent had computer experience,
b. over 70 percent had no mainframe or microcomputer formal instruction,
c. less than two percent owned a computer,
d. less than eight percent of the students' parents owned a computer,
e. mean years basic calculator experience was 7.26 years,
f. mean years programmable calculator experience was 0.24 years, and
g. mean hours on video games was 1.36 (1=1-10 hours; 2=11-50 hours). Almost 14 percent of the students had more than 50 hours of experience playing video games.

The following summarize the student academic characteristics obtained from the demographic survey:

a. mean years of vocational agriculture at the secondary level was 0.84 years,
b. mean semesters of mathematics at the secondary level was 5.64 semesters,
c. mean post-secondary semesters of mathematics was 2.46,
d. mean average mathematics grade at the secondary level was 2.97 (2="C"; 4="B"),
e. mean post-secondary average mathematics grade was 3.73 (3="C"; 4="B"),
f. highest grade subjects at the secondary level were mathematics,

science, and vocational agriculture,

g. lowest grade subjects at the secondary level were mathematics, history, and English,
h. best liked subjects at the secondary level were science and vocational agriculture,
i. least liked subjects at the secondary level were mathematics. English, and history, and
j. mean typing ability was 2.78 (2=11-20 wpm; 3=21-30 wpm).

The Effect of Teaching Method or Student Characteristics on Student Attitude

Analysis of covariance was used to determine if student attitude was significantly affected by the teaching method or student characteristics. Pretest attitude scores were used as the covariate in both cases. Refer to Table 1 for F values and F probabilities. There was no significant difference in attitude scores when the students were grouped by teaching method. Therefore, attitude was not affected by the teaching method.

Student characteristics were analyzed individually to determine their effect on student attitude. Only two characteristics were found to be significant. A significant difference was found in typing ability. Generally, the students who could type faster had higher posttest attitude scores. A significant difference was also found when comparing computer experience. As the amount of computer experience increased, the posttest attitude score increased correspondingly. The fear or intimidation of using a computer dissipates as students become more in control of the computer and their attitude becomes more positive.

Effect of Teaching Method or Student Characteristics on Student Achievement

To determine if student posttest knowledge scores (achievement) were significantly affected by the teaching method or student characteristics, analysis of covariance was again used. In both cases the pretest knowledge score was used as the covariate. Table 2 shows the F value and F probability for each.

When the students were grouped by teaching method (computer-assisted instruction versus traditional lecture), an analysis of covariance failed to reveal a significant difference in the posttest knowledge scores. Computer-assisted instruction, therefore, has proven to be neither superior nor inferior to traditional lecture as a teaching method when teaching BASIC computer programming. The success of computer-assisted instruction as a superior teaching method appears to be dependent upon the subject matter being taught. However, an advantage of computer-assisted instruction is that it gives the instructor more time in class for individualized instruction and other classroom activities. A disadvantage is that it requires a great deal of time for the initial programming of the materials.

Significant differences were found in posttest knowledge scores for some student characteristics when the students were grouped by individual characteristics.

When students were grouped by the subjects in which they earned their highest grades at the secondary level, a significant difference was again found. The students with the highest grades in physical education, English, and mathematics also had the highest knowledge scores. Similiarly, Friesen (1976) found that students with good prior achievement in mathematics achieved the best in a university mathematics course in which computers were used.

A significant difference was found when students were grouped by their lowest grades at the secondary level. Students earning their lowest grades in mathematics, science, and history scored lower on the knowledge test.

When grouping students by grades earned in mathematics at the secondary and post-secondary level, there was a significant difference in knowledge scores. As the average mathematics grade rose, the knowledge scores rose almost correspondingly. Achievment in mathematics evidentally requires the same type of ability as does computer skills and programming. The amount of mathematics in secondary or post-secondary schools produced no significant differences; only the grade earned made a difference.

When grouping students by the number of years of vocational agriculture, a significant difference was found in knowledge scores. Students with vocational agriculture scored significantly lower than students with no vocational agriculture. A explanation might be that instead of taking vocational agriculture, these students enrolled in courses that affected their level of achievement, or some secondary schools may not have offered vocational agriculture.

A significant difference was also found when students were grouped by student classification, student major, and occupational plans. Limited observations for these categories make it difficult to draw any specific conclusions.

There was a significant difference in knowledge scores when students were grouped by the hours of video game experience. The students with the least video game experience had the highest means. An observation of the study was that students with more video game experience entered the class with unrealistic expectations of programming ability or immediate computer usage. When they realized that the computer is totally dependent on their communicative ability and expertise, their confidence and attitude greatly diminished which, in turn, affected their attitude.

A significant difference was found when students were grouped by the person influencing them to take the course. The "myself" category had the highest mean score. Most students enrolled to learn how to use a computer even though it was not part of their program of study. Thus, student desire is a good motivator to achieve in a BASIC programming course. The desire to be enrolled in the class rather than attending to fulfill a degree requirement made a difference.

Effect of Student Attitude on Student Achievement

To determine if students' posttest knowledge scores were significantly affected by attitude, analysis of covariance was again used with the pretest knowledge score as the covariate. A significant difference ($P<.10$) was found with an F value of 1.84 and F probability of 0.07. There was a definite positive relationship between pretest attitude scores and posttest knowledge scores. As indicated by these results, a student's attitude upon entering a class may be a barrier to achievement.

Implications

It appears that achievement in mathematics is one of the prime indicators of achievement in computer skills. Since agriculturalists are very involved with computers and will become more involved in the future, vocational agriculture and other agricultural programs should place more emphasis on mathematics-oriented skills.

Programs of vocational agriculture and agricultural/agribusiness education should introduce their students to the rigors of computer skills as early as possible within the program to help them overcome the fear and intimidation of the computer, and to improve their attitude toward the computer and computer use.

Students in agriculture need to develop typing skills in order to improve their attitude toward computer use and to use the computer effectively.

Advisors, teachers, parents, and others need to impress upon students the advantage of possessing computer skills to motivate the student to take computer classes rather than having the student take the class to fill a program of study.

Teachers in agriculture should adopt the computer as a teaching aid and need to develop or procure the software to meet their needs. The computer should be viewed as a tool to supplement and enhance the lesson material, allowing the teacher more time for individualized instruction or other classroom activites, and not as a device to replace the teacher.

In order for students to maximize their potential, prerequisite mathematics courses and specific levels of mathematics achievement should be required of students who wish to enroll in post-secondary computer classes.

Because computer-assisted instruction has been proven to be at least as effective a teaching method as conventional lecture, course structure should be changed to accommodate this new teaching aid.

The use of computer-assisted instruction in the classroom will increase the time a teacher has to practice the pragmatic approach to teaching by increasing individualized instruction.

Table 1. F-values and F-probability for posttest attitude scores with pretest attitude scores (covariate) and teaching method or selected student characteristics.

Variable Description	F Value	F Probability
Teaching Method	.17	.68
Student Characteristic:		
Setting where you were raised	2.05	0.13
Semesters of vo-ag in grades 9-12	0.64	0.53
Subject of highest grade in grades 9-12	0.72	0.63
Subject of lowest grade in grades 9-12	1.21	0.31
Best liked subject in grades 9-12	0.59	0.76
Least liked subject in grades 9-12	0.99	0.43
Semesters of math in grades 9-12	0.83	0.58
Average math grade in grades 9-12	0.69	0.56
Words typed per minute	2.42**	0.03
Father or male guardian occupational computer use	0.52	0.47
Mother or female guardian occupational computer use	0.00	0.96
Student classification	1.39	0.25
Student major	1.52	0.16
Computer experience	3.03**	0.03
Microcomputer instruction	0.30	0.58
Mainframe computer instruction	0.01	0.91
Microcomputer ownership	0.00	0.95
Parent or guardian computer ownership	0.54	0.47
Basic calculator experience	1.34	0.26
Programmable calculator experience	0.79	0.38
Post-secondary semesters of math	1.71	0.13
Post-secondary average math grade	0.48	0.70
Video game experience	1.37	0.26
Computer interest from employment	0.09	0.76
Occupational plans	0.77	0.64
Factor influencing you to take course	1.38	0.24
Person influencing you to take course	0.81	0.45
Command of English language	1.03	0.40

** Significant at the .05 level ($P<.05$)

Table 2. F-values and F-probability for posttest knowledge (achievement) scores with pretest knowledge scores (covariate) and teaching method or selected student characteristics.

Variable Description	F Value	F Probability
Teaching Method	.34	.56
Student Characteristic:		
Setting where you were raised	0.80	0.45
Semesters of vo-ag in grades 9-12	3.00*	0.06
Subject of highest grade in grades 9-12	1.85*	0.10
Subject of lowest grade in grades 9-12	4.29**	0.001
Best liked subject in grades 9-12	1.43	0.21
Least liked subject in grades 9-12	1.35	0.25
Semesters of math in grades 9-12	1.38	0.22
Average math grade in grades 9-12	3.49**	0.02
Words typed per minute	1.56	0.16
Father or male guardian occupational computer use	0.00	0.97
Mother or female guardian occupational computer use	0.24	0.63
Student classification	3.04**	0.02
Student major	1.86*	0.08
Computer experience	1.61	0.19
Microcomputer instruction	1.86	0.18
Mainframe computer instruction	0.01	0.91
Microcomputer ownership	1.35	0.25
Parent or guardian computer ownership	0.20	0.65
Basic calculator experience	1.50	0.20
Programmable calculator experience	0.73	0.40
Post-secondary semesters of math	1.56	0.17
Post-secondary average math grade	2.36*	0.08
Video game experience	3.68**	0.02
Computer interest from employment	0.98	0.33
Occupational plans	2.35**	0.02
Factor influencing you to take course	1.34	0.25
Person influencing you to take course	3.53**	0.03
Command of English language	1.44	0.23

* Significant at the .10 level (P<.10)

** Significant at the .05 level (P<.05)

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THE EFFECTS OF TEMPERATURE AND CLOTHING UPON STUDENT PERCEPTIONS OF THE MECHANICS LEARNING ENVIRONMENT

BY

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INTRODUCTION

During the past ten years much controversy has surfaced regarding the supply and usage of fossil fuel in this country. Although the debate continues concerning the makeup of a national energy policy, it remains evident that conventional fuels will be a more limited and costly resource in the future. The concern for fuel conservation is observed to be influencing the sociological, industrial, governmental and educational institutions in this country. Increasing numbers of families are looking at ways to heat and cool homes with alternative fuel sources. Industry is observed changing from scarce to more abundant fuel sources, while governmental and educational agencies have operated on reduced work weeks and at below normal environmental temperatures to curtail costs and conserve energy. While change in energy use is promoted mostly by economics, vocational educators are concerned that such decisions will influence the environmental conditions under which their students work, study and learn.

Observation of vocational agriculture mechanics laboratories indicate that many facilities are not equipped to adequately maintain an optimum cool weather temperature. As was noted by Rutgers (1973:23), many secondary vocational laboratories were designed by just dumping a quantity of heat into the room. The problem has been further compounded by schools setting operating temperatures to conserve energy and lower heating costs. Recent efforts by the United States Office of Education (1977) to develop national exemplary standards for programs of agricultural/agribusiness education failed to identify optimum temperature settings for mechanics laboratories. Lack of consistency exists among schools and teachers concerning optimum cool weather temperature settings, particularly when viewed in conjunction with establishing an optimum learning environment.

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Past research has shown that temperature settings do change the learning performance of students and indicate that attitudinal changes do result when uncomfortable temperatures are encountered. Bear(1976) noted that students of vocational agriculture engaged in laboratory activities should have protective work clothing over regular school dress which will reduce the need for environmental heat. Observers would note, however, that many laboratory classes have students working with varying amounts of protective clothing; thereby, adding another dimension to the correctness of an optimum laboratory temperature setting. Where individual temperature controls for laboratories exist, Rutgers(1973) noted that environmental temperatures may be adjusted to the comfort of the instructor and not the students.. The comfort differential may vary as much as five degrees between students and the teacher. Therefore, it is apparent that additional information concerning the ways which cool temperatures influence student perceptions of learning in the agricultural mechanics laboratory would be helpful in maintaining an optimum learning environment.

PURPOSE AND OBJECTIVES

The purpose of the study was to determine the effects of low ambient temperatures and protective clothing upon student perceptions about the agricultural mechanics learning environment. Specifically, the objectives of the study were to:

1. Determine if student perceptions toward the agricultural mechanics learning environment were affected by low ambient temperatures.

2. Determine if protective clothing affected student perceptions toward the agricultural mechanics learning environment in the presence of low ambient temperatures.

3. Determine an acceptable cool weather temperature for agricultural mechanics laboratories.

Environmental psychologist inform educators that to enhance the learning environment, the needs of each student and teacher should be treated individually. Experts suggests that institutional standards may be a hinderance to providing optimum learning environments because of individual preferences. The uniqueness of a learner's reaction to a given environment suggests that the conforming vocational school environment may be inappropriate for all students and may be the cause of many school related discipline problems. As the skin is the largest sensory organ in the human body, maintaining an acceptable environmental temperature for each student is essential for optimum learning to occur.

The most favorable physical condition for learning is to have the learner in a comfortable temperature surrounding such that her/his attention is not diverted from educational activities by unpleasant temperature surroundings. In cool environments the body goes through two physiological defense reactions (Gagge, Stokwijk and Hardy , (1967) and Lockhart and Kiess (1971)). First there is a sensation of thermal discomfort; at this stage of sensitivity the individual recognizes that he/she is getting cold. This is referred to as "sensation to thermal discomfort". As the body continues to get colder, the second stage of discomfort can be identified. This is referred to as "thermal discomfort" and recognized when parts of the body hurt because of cold. The following criteria contribute to the defense mechanisms being triggered in an individual: level of clothing, level of physical activity, temperature of surroundings, and metabolic rate of the body being primary considerations.

Within the past decade many energy and fiscal conservationists have imposed institutional temperature standards upon their programs. The President's Proclamation of an Energy Emergency (1979) ordered that winter temperatures be maintained by heating public buildings to no more than 65 degrees F. Subsequently, thermostats in schools and other public buildings are currently set by maintenance staff and many have protective covers which prevent individual adjustment of heat. Some universities and secondary schools now set classrooms and office temperatures at 68 degrees F. One high school was noted to publicly announce that school temperatures would be reduced to 50 degrees F during a severe energy curtailment period. Bear (1974) recommended that vocational agriculture mechanics laboratory temperatures may be lowered to 55-60 degrees F given protective clothing and sufficient physical activity. The Nation's Schools (1959:90) summarized the problem well when it reported that thermal environments have received little consideration in school buildings and "have taken a back seat to other environmental factors."

The basis for most recommendations regarding optimum winter school plant temperatures comes from industry and military studies. Few temperature studies in education have focused upon the effects of low ambient temperatures on learning. Considering the needs of individual learners, educators should be concerned about the generalizability of industry and military recommendations to the secondary school population. Rutgers raises some doubt about this generalizability when he notes that students may be comfortable in a five degree F cooler environment than their teachers.

PROCEDURES

Using an experimental design, this study was conducted as a posttest-only control group experiment. Campbell and Stanley (1963) noted that the posttest-only control group design has the advantage of eliminating pretest conditioning in attitudinal studies.

Nine schools were chosen at random from the population of 23 high schools in the Blue Ridge supervisory area in Virginia that offered the course Agricultural Science and Mechanics I. All students in each class were asked and consented to serve as part of the research sample from each school. Subjects were randomly assigned to groups and groups randomly assigned to treatments. Three groups were assigned for the experiment. Group one students worked in the vocational laboratory in normal school clothing. Five classes of group one subjects worked at an experimental temperature of 50 degree F, five classes worked at 60 degree F and five classes worked at 70 degree F. Group two students worked in the vocational laboratory with protective clothing provided by the researcher. Five classes of group two students worked at 50 degree F, five classes worked at 60 degree F and five classes worked at 70 degree F. Randomly selected students from each class were assigned to the control group. The control group performed in normal school clothing at a 67 degree F temperature. Measures were taken from control group and experimental groups on consecutive days.

Prior to the experiment each class was taught how to construct a drill bit stand by a researcher prepared self-instructional package. The instructional package was administered by the regular classroom instructor on the day prior to the experiment. The drill bit stand project was selected because it involved the use of skills taught in all the schools participating in the experiment and because it required the same approximate level of physical activity exerted on many other laboratory exercises and projects performed by these students. Each instructor agreed to condition his students to the experimental temperature for a one week period prior to the experiment. A 40-minute period was used for the laboratory work time.

Experimental materials and data collection instruments were researcher perpared. Face validity was established by use of an expert committee. Materials were subjected to a pilot study, refined, then field tested again and refined before the experiment. The instrument used to measure student perceptions about the learning environment was a seven part semantic differential scale. Coefficient alpha reliability tests ranged from .83 to .92 for each part of the perception instrument with an overall mean of .88.

Data for the experiment were collected during the winter months of January, February and March. Laboratories were cooled overnight by turning heat off. Heat was interjected prior to the experiment to bring the laboratory up to desired experimental temperature. Experimental and control temperatures were maintained by opening doors and windows and/or turning the heat on. Ambient temperatures were measured at work bench height. Measures of temperature, air velocity and relative humidity were taken at twelve minute intervals during the experiment. Semantic differential scale measures were taken after the forty minute work period. The researcher gave all directions and performed all instruction on days of the experiment.

RESULTS

Multivariate analysis of variance (MANOVA) was used to simultaneously analyze the effect of temperature on the seven factors related to perceptions toward the learning environment. The Hotelling-Lawley trace was significant at the .05 alpha level; therefore, a one way analysis of

* Variable name on the semantic differential scale instrument used to measure perceptions toward the learning environment.

variance (ANOVA) procedure was used to reveal which perception factors were significant. The ANOVA procedure revealed that the perception factors of comfort* and temperature* were significant at the .05 alpha level. Therefore, this study concluded that for the stated population student perceptions toward the agricultural mechanics learning environment were affected by low ambient temperatures.

Table 1

MANOVA TEST OF OVERALL TEMPERATURE EFFECT

Effect	H-LT	f	df	pb
Temperature*	.5404	1.80	54 and 1082	.0004

Table 2

One-way ANOVA for Comfort and Temperature

Variable	Source	SS	df	F	PR-F
Comfort	Between	1046.2	6	2.86	.010
	Within	28561.9	190		
Temperature*	Between	3964.4	6	4.40	.0003
	Within	28561.9	190		

*Variable name on the semantic differential scale instrument used to measure perceptions toward the learning environment.

Since the overall MANOVA Test of Temperature, Protective Clothing and Interaction Effect was significant and the One-Way ANOVA revealed that the perceptions factors of comfort and temperature were significant, a Two-Way ANOVA was performed to determine the influence of the independent variables, protective clothing and low ambient temperature, upon the significant dependent variables and perception factors, *comfort and *temperature.

The partitioned variances revealed that temperature effects upon the factors of comfort and temperature * were significant at the .05 alpha level. However, the partitioned variances for the effects of protective clothing and interaction were not significant on the comfort and temperature* factors. These findings indicate that when the students in this sample worked in agricultural mechanics laboratory without protective clothing they had significant adverse perceptions about their temperature* and their comfort. However, when the students in the sample worked in the vocational laboratory with protective clothing they did not exhibit significantly different perceptions about their *temperature or about their *comfort than those students in the control group.

For this population it was concluded that protective clothing helped to reduce adverse perceptions about the vocational learning environment in the presence of low ambient temperatures.

Table 3

MANOVA Test of Overall Temperature
Protective Clothing and Interaction Effect

Effect	H-LT	F	df	pb
Temperature Protective Clothing and interaction	.5404	1.80	54 and 1082	.0004

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*variable name on the semantic differential scale instrument used to measure perceptions toward the learning environment.

Table 4

Univariate and Two-Way Analysis of Variance of Significant Factors on Perceptions Toward the Learning Environment Considering Effects of Temperature, Protective Clothing and Interaction

Variable	Source	SS	df	F	PR-F
Comfort	Between	1046.2	6	2.89	.0109
	Within	11585	190		
Comfort	Temperature	464.5	2	3.33	.0387
	Protective Clothing	33.9	1	.49	.4862
	Interaction	222.1	2	1.59	

Variable	Source	SS	df	F	PR-F
Temperature	Between	3964.4	6	4.40	.0003
	Within	28561.9	190		
Temperature*	Temperature	2050.4	2	5.85	.0037
	Protective Clothing	241.9	1	1.38	.2420
	Interaction	356.2	2	1.02	.3646

Least square means were examined to determine an acceptable cool weather laboratory temperature for the schools participating in this study. The means were rank ordered and summed to determine the temperature levels and levels of protective clothing which had the most positive perceptions about their learning environment. Rank order sums indicated that students in the control group exhibited the most positive perceptions about their learning environment. Students in the experimental groups working at the 70 degree F temperature exhibited the second highest rank scores. The students working at 70 degree F who also wore protective clothing scored slightly higher than students who worked without protective clothing. The students who worked at 60 degree F without protective clothing exhibited the lowest rank order scores which indicates the most adverse perceptions about their learning environment.

*Variable name on the semantic differential scale instrument used to measure perceptions toward the learning environment.

Table 5

Least Square Mean Perceptions of the Learning Environment By Temperature Levels and Levels of Protective Clothing

	50 Degrees F		60 Degrees F		70 Degrees F		67 Degrees F
	Without Protective Clothing	With Protective Clothing	Without Protective Clothing	With Protective Clothing	Without Protective Clothing	With Protective Clothing	Without Protective Clothing
Comfort	38.68	37.04	33.74	38.00	40.39	40.68	40.86
Classmates	47.76	46.36	43.39	40.88	45.70	44.84	46.07
Temperature	39.92	38.96	36.35	42.96	46.96	49.21	47.86
Shopwork	48.36	42.72	42.43	43.73	45.65	46.58	47.20
School	44.04	48.12	44.91	42.46	43.83	40.16	48.88
Teacher	41.52	43.44	44.61	45.72	49.26	44.79	46.66
Tools	47.40	46.44	43.35	44.58	47.39	48.95	48.79

Table 6

Rank Order Scores of Perceptions of the Learning Environment by Temperature and by level of Protective Clothing

	50 Degrees F Without Protective Clothing	50 Degrees F With Protective Clothing	60 Degrees F Without Protective Clothing	60 Degrees F With Protective Clothing	70 Degrees F Without Protective Clothing	70 Degrees F With Protective Clothing	67 Degrees F Without Protective Clothing
Comfort	4	2	1	3	5	6	7
Classmates	7	6	2	1	4	3	5
Temperature	3	2	1	4	5	7	6
Shopwork	7	2	1	3	4	5	6
School	4	6	5	2	3	1	7
Teacher	1	2	4	3	7	5	6
Tools	4	3	1	2	5	7	6
	====	====	====	====	====	====	====
	30	23	15	18	33	34	43

CONCLUSIONS

For the population under investigation, this study revealed that when students are exposed to vocational laboratories with low ambient temperatures that adverse perceptions toward the learning environment do occur. The data indicates that if students wear protective clothing when working in a cool educational environment that perceptions about their learning environment will not be as negative as those observed when regular school clothes are worn in the laboratory. This may indicate that laboratory temperatures could be reduced some to conserve fuel and/ or operating costs if all students were required to wear protective clothing while working in their vocational laboratories.

This study revealed that in the presence of light to medium physical activity, the control temperature of 67 degrees F, without protective clothing, yielded the most positive perceptions about the learning environment.

Given the results of this experiment and noting their agreement with recommendations from industry and military studies, the study concluded that a cool weather environmental temperature of 67 degrees F would be acceptable for students who wear protective clothing in the vocational laboratory, as well as, for those students who participate in vocational activities in clothing normally worn to school.

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VARIABLES AFFECTING THE ACHIEVEMENT OF STUDENTS MAINSTREAMED IN VOCATIONAL AGRICULTURE

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INTRODUCTION

Supervised Occupational Experience programs are a major component of the total vocational agriculture program. Vocational Agriculture teachers play an important role in assisting students develop SOEPs. These programs provide students with practical experiences related to subject matter taught in vocational agriculture.

Handicapped students, unlike their non-handicapped peers, are often left with limited opportunities in developing SOEPs. This is due to several variables that have been investigated. Related research based on supportive research may bring one to conclude that a SOEP is an essential as well as an effective learning tool in vocational agriculture. Morton (1978) determined that there was a positive relationship between achievement test scores and quality scores of SOEP. Arrington (1981) also found a positive co-relation between SOEP and FFA. Vaughn and Wagley (1979), recommended a way to build a better FFA, one should stress SOEP. Rawls (1980) study revealed that parents perceived their sons and daughters to have benefited from SOEPs. Therefore, research reveals that these SOEPs are vital. All students enrolled invocational agriculture, should then have a SOEP, despite that limited opportunity of some.

PURPOSE AND OBJECTIVES

The purpose of this study was to examine the type and scope of SOEP and the achievement of students mainstreamed in vocational agriculture in Ohio. SOE programs consist of out-of-class project activities designed to supplement the instructional program of vocational agriculture. Student achievement has been found to be directly related to SOEP scope in previous research, therefore, it has been recommended for all students enrolled in vocational agriculture. The following hypotheses directed the research:

Hypotheses

1. Student achievement level is positively related with the SOEP score.
2. The achievement level of students is related to the type of SOE program.
3. The achievement level of students is directly related to the scope of the SOE program.
4. Student achievement level is positively related to FFA involvement.
5. The achievement level of students is positively related to the number of FFA awards received.
6. The achievement level of students is positively related to the number of FFA field trips in which students have participated.
7. The achievement level of students is positively related to the degree of FFA participation of the student.
8. The achievement level of students is positively related to the length of FFA membership.
9. Achievement level of students is related to the type of handicap of the student.
10. Achievement level is positively related to SOEP opportunity.
11. Achievement level of students is related to the students' place of residence.
12. Achievement level of students is positively related to the socio-economic status of students.
13. Achievement level of students is positively related to parental support received by students.

METHODOLOGY

Population and Sample

The Population included students mainstreamed in vocational agriculture programs in Ohio. Vocational agriculture programs were in joint vocational schools, comprehensive high schools, and city vocational schools. The population was identified from the Vocational Education (VE-21) reporting manual for fiscal year 1983. This manual reported 885 mainstreamed students enrolled in Ohio's vocational agriculture programs.

Cluster sampling was used. Teachers were randomly selected. All handicapped students taught by that teacher were included in the sample. Two stratified random samples were drawn from a target population of 885. One hundred and fifty students were randomly selected from comprehensive high schools and 150 were randomly selected from joint vocational schools and city vocational schools. The sample size totaled 300 students. These students were distributed among eighty-two vocational teachers in Ohio.

Qualitative Sample

The qualitative sample was also taken from this population of 885 mainstreamed vocational agriculture students. Ten vocational agriculture departments were selected based on their close proximity to Columbus, Ohio. These sites were five comprehensive high schools, three joint vocational schools, and two career centers. The researcher interviewed ten teachers and thirty students at these schools. The handicapping conditions ranged from multiple handicaps to developmental handicaps. The teachers interviewed consisted of five production agriculture teachers, three agricultural machanics teachers, and two ornamental horticulture teachers.

Instrumentation

The instrument for collecting data on students mainstreamed in vocational agriculture programs in Ohio was developed by the researcher. The instrument was referred to as a student information form. The instrument consisted of four major parts: Part I - Student Characteristics; Part II - FFA Involvement; Part III - Type and Scope of SOEP; and Part IV - Student Opportunity to have a SOEP.

The instrument was field tested by graduate students enrolled in the Winter Quarter 1984 of the Agricultural Education Graduate Seminar (Problems and Issues in Agricultural Education). Three faculty members assisted in its revision and approval. This instrument was also pilot-tested on ten students enrolled in vocational agriculture in Licking County, Ohio at Johnstown High School, Northridge High School, and Licking County Joint Vocational School.

The instrument used to collect qualitative data was developed by the researcher and a faculty member in exceptional child education. The instrument was designed to collect data on variables in the study. Therefore, questions relevant to these variables were considered. The instrument consisted of questions in the following areas: planning and placement of handicapped students, teacher perceptions of their competencies to teach handicapped learners, SOEP development, student evaluation, student activities, student background, and student career pursuits.

Data Collection

The instrument was mailed to eighty-two vocational agriculture teachers who taught the 300 mainstreamed vocational agriculture students. A cover letter was sent explaining to the vocational agriculture teachers the need and importance of the study. In two weeks, a follow up letter was also mailed to the eighty-two vocational agriculture teachers. The instrument was mailed for the second time. A 68.3 % response rate was obtained. After the deadline for submission of mailing had passed, a final attempt to secure respondents was made. Telephone interviews were done to secure data from five non-responding teachers who had 13 mainstreamed students. No differences were found between the respondents and non-respondents. The final response rate was 72.7%. Data were collected from 218 of the 300 students in the sample and 60 of the 82 teachers.

Statistical Analysis

Data were analyzed with the use of the SAS and SPSS computer systems at The Ohio State University. Data were tabulated and cross-tabulated to describe the sample. The Pearson Product Moment Correlational Coefficient was used to describe the relationship between the variables. Semi-partial correlational coefficients were obtained to indicate the unique portion of the variance explained by each variable and each variable set. Multiple regression statistics were used to predict variable scores.

Qualitative data were summarized based on formulated research questions. The research questions were related to the variables in the study.

RESULTS

Semi-Partial Multiple Regression

Table 1 indicates the semi-partial multiple regression coefficient for sets of independent variables found to be significantly correlated with student achievement. First, student opportunity ($K_b = 8$) as a set did account for a significant unique proportion of the variance in student achievement. The calculated semi-partial squared multiple regression correlation coefficient (sR2= .2137) proved significant based upon the calculated F-test: F=7.3; P<.05; df=(8,135).

Second, the variables making up the set of FFA involvement ($K_b = 4$) did account for a significant unique proportion of variance in the dependent variable (student achievement).

Table 1

Semi-Partial Multiple Regression Coefficient For Sets of Independent Variables Found to be Significantly Correlated with Student Achievement

Variable Set	Ka	Kb	sR^2	F
FFA Involvement	11	4	.0921	6.05[1]
Type of Handicap	14	1	.0039	1.03
Opportunity	7	8	.2137	7.03[2]
SOEP Scope	13	2	.0297	3.92[3]

Full Model R^2= .4926 $P<.05$ (df=33,116)

[1] $P<.05$ (df=4,135)
[2] $P<.05$ (df=8,135)
[3] $P<.05$ (df=2,135)

The semi-partial squared multiple regression correlation coefficient was sR2=.0921 with a calculated F-test value of 6.05; $P<.05$; df=(4,135).

The set of SOEP scope (Kb=2) also accounted for a significant unique proportion of variance in the dependent variable (student achievement). The semi-partial multiple regression correlation coefficient was .0297 with a calculated F-test value of 3.92; $P<.05$; (df=2,135).

The set of SOEP scope (Kb=2) also accounted for a significant unique proportion of variance in the dependent variable (student achievement). The semi-partial multiple regression correlation coefficient was .0297 with a calculated F-test value of 3.92; $P<.05$; (df=2,135).

Type of handicap, or the tendency to be multiply handicapped, while significantly related with student achievement (r=.18), failed to contribute a significant unique portion of the explanation of variance (sr2=.0039, $P<.05$).

THE CORRELATION COEFFICIENTS BETWEEN THE LEVEL OF STUDENT ACHIEVEMENT AND THE VARIABLES

The variables or factors in Figure 1 were significantly related to the level of student achievement. All of the students' characteristics variables were unrelated to student achievement except the variable of being multiply handicapped. Therefore, the student characteristics variables were deleted in Figure 2. The variables will be discussed in the following order; the student characteristics variables, the FFA involvement variables, the SOEP variables, and the student opportunity variables.

Student Characteristics

The student characteristics variables did not explain a significant proportion of variance in student achievement. However, there was a significant low positive relationship between student achievement and the tendency to be multiply handicapped. Type of handicap as a whole was unrelated to student achievement. Student characteristics variables that were unrelated to student achievement included Type of School (r= -.06), and Length of Enrollment in Vocational Agriculture (r= .09).

FFA Involvement

A significant proportion of variance in student achievement was explained by the cumulative set of FFA involvement variables. The following FFA involvement variables were significantly related to student achievement:

1. FFA Awards (r=.27)
2. FFA Offices (r=.30)
3. FFA Participation (r=.35)
4. FFA Field Trips (r=.19)

There was only one FFA involvement variable that was unrelated to student achievement and this was length of FFA membership (r= -.04).

SOEP

A significant proportion of variance in student achievement was explained by the cumulative set of SOEP variables. Below are listed those SOEP variables that are both significantly related, and unrelated.

Significant Related SOEP Variables:

1. In-school laboratory projects (score 3) r=.19
2. Total PMWUs (score 1 + score 2 + score 3 + score 4) r=.15

Unrelated SOEP Variables:

1. Crop and Livestock Projects (score 1) r=.02
2. Improvement and skill development projects (score 2) r= -.05
3. Job Placement and Co-op (score 4) r=.09
4. Out-of-school SOEP (score 1 + score 2 + score 4) r=.04

Student Opportunities

The following student opportunity variables demonstrated significant relationships with the dependent variables:

1. Being non-farm rural resident (r= -.13)

2. Being city or town resident (r=.19)

3. Living with guardian (r= -.12)

4. Living with one parent (r=.13)

5. Money students received from parents (r= -.13)

6. Encouragement students received from parents (r=.24)

7. Student participating in a reduced price or free lunch program (r= -.16)

8. Occupational status (r=.25)

Student opportunity variables that were unrelated to student achievement included:

1. Students who had brothers or sisters enrolled in vocational agriculture (r= 1.01)

2. The adult responsible for the students (r=.00)

3. Materials students received from their parents for SOEP development (r= -.03)

4. Other assistance students received from their parents for SOEP development other than money, material, and encouragement (r=.01)

5. Being from a full-time farm (r=.00)

6. Being from a part-time farm (r= -.07)

7. Living with both parents (r= 1.05)

8. Living with other than parent or guardian (-.01)

Multiple Regression Correlation Coefficient

Three FFA involvement variables, four opportunity variables, and one SOEP variable showed significant semi-partial relationship with grade and therefore were included in the regression analysis. There were only five selected in the step-wise multiple regression. The five variables and their multiple regression correlation coefficients can be found in Table 2. The best predictors of student achievement in or of significance were:

1. The student self-rating of his or her FFA extent of participation.
2. The number of FFA offices the student had held.
3. The number of FFA awards the student had received.
4. The occupational status of the student's parent.
5. The money the student received from parent(s) for SOEP development.

The multiple regression equation with the respective calculated raw-score partial regression weights (Bs) and the intercept (A) is as follows:

$$Y = 1.077 + .168X_1 + .312X_2 + .158X_3 + 161X_4 - .318_5.$$

This equation represents those significant variables which best predict student achievement. The total multiple regression coefficient, R2=.29, represented the proportion of variance explained in the dependent variable (student achievement) by the regression equation.

Table 2
Step-Wise Multiple Regression of Student Achievement on the Significant Independent Variables

Variables	B	R	R^2	R^2 Increment
FFA Participation (X_1)	.168	.386	.149	.149
FFA Offices (X_2)	.312	.454	.206	.057
FFA Awards (X_3)	.158	.487	.237	.031
Occupation (X_4)	.161	.511	.261	.024
Money (X_5)	-.318	.536	.288	.017

*$P < .05$ $F=13.086$ (df=5,162)

6

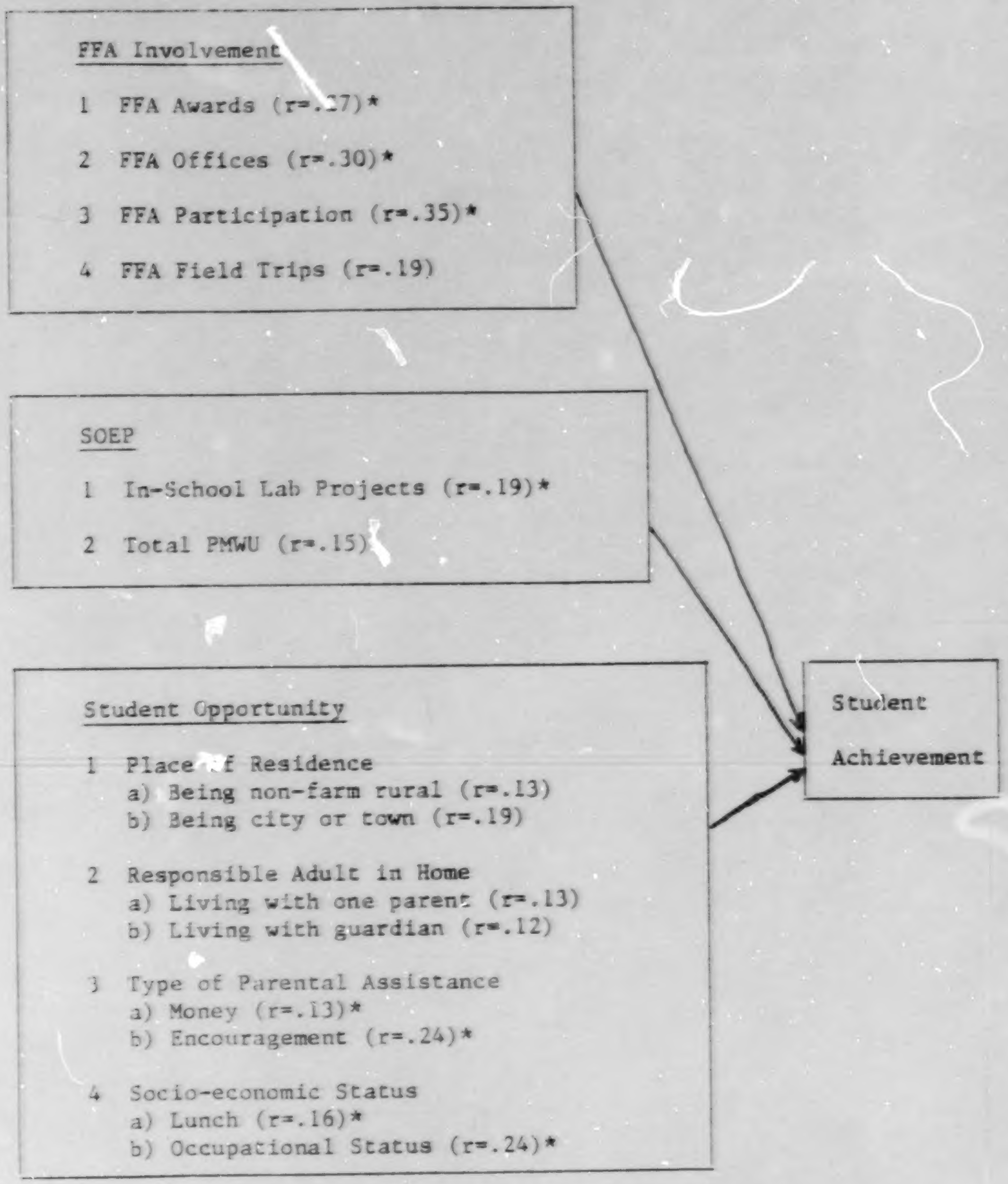
FFA Involvement
1 FFA Awards (r=.27)*
2 FFA Offices (r=.30)*
3 FFA Participation (r=.35)*
4 FFA Field Trips (r=.19)
SOEP
1 In-School Lab Projects (r=.19)*
2 Total PMWU (r=.15)
Student Opportunity
1 Place of Residence
a) Being non-farm rural (r=.13)
b) Being city or town (r=.19)
2 Responsible Adult in Home
a) Living with one parent (r=.13)
b) Living with guardian (r=.12)
3 Type of Parental Assistance
a) Money (r=.13)*
b) Encouragement (r=.24)*
4 Socio-economic Status
a) Lunch (r=.16)*
b) Occupational Status (r=.24)*
Student Achievement

Figure 1
Revised Model of Student Achievement

* Significant semi-partial correlation with dependent variable $P<.05$

CONCLUSIONS

Conclusion 1: There is not a relationship between the level of student achievement and type of handicap.

Conclusion 2: There is not a relationship between the level of student achievement and the scope of the out-of-school SOEP.

Conclusion 3: There is not a relationship between the level of student achievement and type of school.

Conclusion 4: There is not a relationship between the level of student achievement and the length of a students' enrollment in vocational agriculture.

Conclusion 5: There is a relationship between the level of student achievement and FFA involvement.

Conclusion 6: There is a relationship between the level of student achievement and scope of in-school laboratory projects and total PMWUs.

Conclusion 7: There is a positive relationship between the level of student achievement and the following student opportunity variables: 1) student living in a town or city, 2) encouragement, 3) students living with one parent, and 4) occupational status.

Conclusion 8: There is a negative relationship between the level of student achievement and the following student opportunity variables: 1) Students living with a guardian, 2) money, 3) lunch, and 4) Students living on a non-farm rural residence.

Conclusion 9: There is a negative relationship between the level of student achievement and students living with a guardian although there is a positive relationship between the level of student achievement and students who lived with one parent. There is not a relationship between the level of student achievement and the following responsible adult variables: students living with both parents, students living with a relative, students living with a responsible adult other than parent, guardian, or a relative.

Conclusion 10: There is not a relationship between the level of student achievement and the number of siblings students had enrolled in vocational agriculture.

Conclusion 11: SOEP does not account for a unique portion of variance in the dependent variable (student achievement).

RECOMMENDATIONS

Based upon the findings of this study, the following recommendations for further study have been generated:

1. An experimental study needs to be conducted on beginning vocational agriculture teachers to determine the effect of preservice exceptional child educational programs.

2. Further studies need to be conducted to determine if there is any inservice training that would help vocational agriculture teachers become more proficient in SOEP development for mainstreamed students.

3. A longitudinal study needs to be conducted to determine the impact supervised occupational experience programs have on the career choice of mainstreamed students.

4. A study needs to be conducted that would explore ways of improving out-of-school SOEP for students mainstreamed in vocational agriculture.

5. A study needs to be conducted in an attempt to identify some factors that will influence greater FFA involvement, higher PMWU scores, and better opportunities for SOEP development for students mainstreamed in vocational agriculture.

6. A study needs to be conducted that will describe the conflicting findings of this study and Morton (1978) on student achievement SOEP. Realizing they each measured student achievement differently, a refined method of measuring the achievement of mainstreamed students needs to be presented in a future study.

7. Vocational agriculture teachers should increase their use of in-school laboratory projects for handicapped students.

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LOUISIANA VOCATIONAL AGRICULTURE TEACHERS' OPINIONS OF IN-SERVICE TRAINING

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Presented to:
Southern Research Conference in Agricultural Education
Mobile, Alabama
March 23-25, 1985

Running Head: LOUISIANA TEACHERS' OPINIONS OF IN-SERVICE

LOUISIANA VOCATIONAL AGRICULTURE TEACHERS' OPINIONS OF IN-SERVICE TRAINING

INTRODUCTION

In-service education for vocational agriculture teachers in Louisiana is provided by the state supervisory staff in three forms: an annual four day in-service workshop in June and July at the state youth camp conducted along with the FFA officer training workshop; an annual state vocational teachers' conference conducted jointly by all vocational service areas, and on-site supervision. Over the past several years, questions have arisen as to the effectiveness of these in-service activities in meeting the needs of Louisiana's vocational agriculture teachers.

Dreessen (1983) described state supervisors of vocational agriculture as the bond that holds all the components together to former a stronger product than the components would be alone. Barrick (1981, 1982) studied the relationship between state-level administrative structure and the role of state supervisors of vocational agriculture. He found that state supervisors and vocational agriculture teachers had similar perceptions of the current and expected role of state supervisors. Barrick recommended further study of the degree and nature of actual contact between state supervisors and local teachers, among others.

This study was initiated to determine the teachers' opinions of in-service training activities conducted by the state staff in Louisiana and the factors that are related to these opinions.

OBJECTIVES

The following objectives guided the study:

1. To determine teachers' opinions of the in-service education program provided by the state vocational agriculture staff for vocational agriculture teachers in Louisiana.

2. To determine what relationships exist between selected demographic variables and teachers' opinions of the in-service activities. The demographic variables included college degree, age, geographical location of the teacher's school, number of summer conference and workshops attended by the teacher over the past two years, and the number of visits received by the teacher from state supervisors of vocational agriculture/agribusiness—FFA.

PROCEDURES

The descriptive survey method of research was used in this study. A questionnaire consisting of items designed to gather information about

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the selected demographic variables and to solicit the teachers' opinions of the in-service activities was mailed to a random sample of 149 vocational agriculture teachers. The sample size was selected from the population of Louisiana vocational agriculture teachers by using Cochran's sample size formula. The minimum sample size needed was 110. Oversampling was used in case a low response rate was encountered.

The first draft of the questionnaire consisted of items derived from the literature in the area of vocational teacher in-service. Teachers' opinions about in-service activities were reported on a five point Likert type scale. The questionnaire was field tested using fifteen vocational agriculture teachers who were not in the sample for the study. The responses and comments of these teachers were used in revising the instrument. Reliability of the Likert scaled items was assessed using Cronbach's Alpha coefficient. The instrument yielded a reliability estimate of .93 for the field test group and .94 for the research sample.

The questionnaire was mailed to the teachers at their school address. After three mailings (two with a letter, questionnaire and return envelope and one with a postcard) and a phone follow-up, a response rate of 100.0% was achieved. Responses from the phone respondents were compared to the responses by mail. No significant differences were found and the phone responses were combined with the mail responses.

The data were analyzed using one way analyses of variance. The alpha level was set at .01 instead of the usual .05 to alleviate the problems associated with multiple F-tests. The nine Likert scale items associated with the summer workshops, the nine Likert scale items associated with the state in-service conference and the three Likert scale items associated with supervision by state staff were combined to produce three dependent variables for use in the analyses of variance. Educational level, years experience as a vocational agriculture teacher, age, school geographical location (city, town, rural), participation in the summer conference and workshop during the past two years, and number of visits received from a state vocational agriculture/agribusiness—FFA supervisor were used as independent variables.

FINDINGS

The responses to the Likert scale items are presented in Table 1. The aspects of in-service that received the highest rating were the quality of the presentors conducting the technical workshops and the usefulness of the technical workshops with both receiving a mean rating of 1.92. The aspect that received the lowest rating was the assistance received from state staff in terms of supervision (school visits to help the teacher become a better teacher). This aspect received a mean rating of 2.62.

Insert Table 1 about here

The results of the analyses of variance are presented in Tables 2 thru 8. As shown in Table 2, the respondents differed significantly in their opinions toward the summer conference and the summer workshop by their educational level. The Scheffe' test revealed that teachers with advanced degrees (Educational Specialist, Ph.D, Ed.D.) rated the summer conference and the summer workshops significantly higher than those teachers with a bachelor's degree.

The data in Table 3 indicate that the respondents differed significantly in their opinions of the summer workshop according to the number of years experience they had as a vocational agriculture teacher. The Scheffe' test indicated that teachers with more than 15 years experience rated the summer workshops significantly higher than teachers with 0-5 years experience.

The respondents differed significantly in their opinions of the summer workshop according to age (Table 4). The Scheffe' test revealed that teachers in the over 41 age range rated the summer workshops significantly higher than teachers in the 20-31 age range.

Tables 5 through 8 display the results of the analyses of variance for four demographic variables, namely, school geographical location, number of summer workshops attended, number of summer conferences attended, and number of visits received by state supervisors of vocational agriculture/agribusiness—FFA. No significant differences existed in the teachers opinions according to any of these variables.

CONCLUSIONS AND RECOMMENDATIONS

Based upon the findings of this study, the following recommendations were made:

1. The ratings received by the in-service program in Louisiana ranged from 1.92 (slightly above good) to 2.62 (between good and fair). No aspect of the in-service program approached an excellent rating. Even though the potential rating of the program is unknown since the teachers do have diverse needs, ratings as high as 1.00 have been achieved by workshops conducted by LSU in the past three years with the average workshop rating for 21 workshops being 1.2. It appears that the overall quality of the in-service program could be improved. Therefore, it is recommended that the state vocational agriculture/agribusiness—FFA staff undertake a program to improve the quality of in-service education for vocational agriculture teachers in Louisiana.

2. The ANOVA results indicated that the teachers with higher college degrees (Education Specialist, Ph.D., Ed.D.) rated the summer conference significantly higher than those teachers with bachelor's degrees. Therefore, it is recommended that the state staff consider making changes in the summer conference that would result in the

conference doing a better job of meeting the needs of those teachers with bachelor's degrees.

3. The ANOVA results indicated that older teachers (>41 years), those with higher degrees, and those with more experience as a vocational agriculture teacher (>15 years) rated the summer workshop significantly higher than younger teachers (20-31 years), those with the bachelor's degree, and those with 0-5 years of experience as a vocational agriculture teacher. Since all of these variables are highly correlated, it is apparent that younger, less experienced teachers do not believe that they are receiving the type of training they need from the existing in-service program. Therefore, it is recommended that the state vocational agriculture/agribusiness—FFA staff take immediate steps to modify the summer workshop program so that it will do a better job of meeting the needs of the younger, less experienced teacher.

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Table 1

Ratings of Statements about In-Service Activities by Teachers

Statement	Mean[a]	S.D.
Quality of the in-service program at LVA?		
A. Technical workshops	2.09	.84
B. Professional sessions	2.08	.73
Amount of time spent on in-service activities at LVA?		
A. Technical workshops	2.34	.77
B. Professional sessions	2.18	.73
Quality of the presentors conducting LVA sessions?		
A. Technical workshops	1.98	.75
B. Professional sessions	2.09	.71
Usefulness of LVA sessions?		
A. Technical workshops	2.07	.85
B. Professional sessions	2.15	.75
Overall quality of total in-service program at LVA?	2.06	.66
Quality of the in-service program at Bunkie?		
A. Technical workshops	1.99	.71
B. Professional sessions	2.19	.80

- -

Table 1 (continued)

Ratings of Statements about In-Service Activities by Teachers

Statement	Mean[a]	S.D.
Amount of time spent on in-service activities at Bunkie?		
A. Technical workshops	2.11	.75
B. Professional sessions	2.18	.79
Quality of presentors conducting sessions at Bunkie?		
A. Technical workshops	1.92	.76
B. Professional sessions	2.00	.78
Usefulness of Bunkie sessions?		
A. Technical workshops	1.92	.76
B. Professional sessions	2.14	.85
Overall quality of in-service program at Bunkie?	2.06	.70
Amount of communication between Voc. Ag. teachers and state staff about all in-service activities and needs?	2.32	.90
Assistance from state staff in terms of supervision (school visits to help you become a better teacher)	2.62	.98
Amount of assistance from state staff in terms of providing you with technical information?	2.26	1.01

[a] Scale: 1 = Excellent, 2 = Good, 3 = Fair, 4 = Poor, 5 = Unacceptable

Table 2

ANOVA of Teachers' Opinions of In-Service Activities by College Degree

In-service activity	College degree Bach. Mean n=74	 Mast. Mean n=42	 >Mast. Mean n=33	F-ratio
Summer conference	2.27	2.13	1.81	6.24**
Summer workshops	2.19	2.04	1.77	5.08*
Supervision	—	—	—	2.13

* p<.01, ** p<.005

Table 3

ANOVA of Teachers' Opinions of In-Service Activities by Years Experience as a Vocational Agriculture Teacher

In-Service Activity	Years Experience 0-5 Mean n=32	 6-10 Mean n=44	 11-15 Mean n=42	 >15 Mean n=31	F-ratio
Summer conference	—	—	—	—	2.31
Summer workshops	2.26	2.25	1.96	1.70	6.55*
Supervision	—	—	—	—	2.34

* p<.0005

Table 4

ANOVA of Teachers' Opinions of In-Service Activities by Age

In-service activity	Age in years 20-31 Mean n=43	 32-41 Mean n=65	 >41 Mean n=41	F-ratio
Summer conference	—	—	—	2.02
Summer workshops	2.34	2.04	1.78	8.52*
Supervision	—	—	—	2.60

* $p<.0005$

Table 5

ANOVA of Teachers' Opinions of In-Service Activities by School Location

In-service activity	School location[a] Rural Mean n=55	 Town Mean n=53	 Urban Mean n=39	F-ratio
Summer conference	—	—	—	0.82
Summer workshops	—	—	—	0.67
Supervision	—	—	—	1.22

[a] Rural - schools not located in a town or city, Town - schools located in a town of less than 5,000 population, and Urban - schools located in a city (5,000 population and over)

Table 6

ANOVA of Teachers' Opinions of the Summer Conference by Number Attended During 1983-84

	Number attended			
	0	1	2	
	Mean	Mean	Mean	
In-service activity	n=46	n=41	n=52	F-ratio
Summer conference	—	—	—	3.56

Table 7

ANOVA of Teachers' Opinions of Summer Workshops by Number Attended During 1983-84

	Number attended			
	0	1	2	
	Mean	Mean	Mean	
In-service activity	n=13	n=22	n=104	F-ratio
Summer workshops	—	—	—	.45

Table 8

ANOVA of Teachers' Opinions of Supervision by Number of Visits Received During Past Three Years From State Supervisors

	No. visits received			
	0-2	3-5	6+	
	Mean	Mean	Mean	
In-service activity	n=00	n=00	n=00	F-ratio
Supervision	—	—	—	0.36

SYNOPSIS OF REMARKS MADE BY GARY MOORE CONCERNING FIVE PAPERS

On the way to the conference several graduate students who were riding with me asked "What is the role of the discussant?" Even though most of us are familiar with discussants the question caused me to pause and carefully think about the role of the discussant. I believe a discussant has two roles. One role is similar to that of a coach. A coach provides positive reinforcement to his/her players when they do a good job. The coach also provides suggestions to players so they can improve their performance. Both functions are positive in nature.

The second role of a discussant is similar to a flag man on a road crew. When there is danger ahead the flag man waves the flag. I perceive a paper discussant should, at times, wave the flag to warn the profession of "research" dangers ahead.

In discussing the papers most of my efforts will lean toward the coaching function with a little flag waving when needed. Only the major points will be touched on.

"ASSESSMENT OF COMPETENCIES POSSESSED BY STUDENTS ENROLLED IN APPLIED PRINCIPLES OF AGRIBUSINESS AND NATURAL RESOURCES EDUCATION."

Max McGhee and Jimmy Cheek, University of Florida

This is an example of a paper which reports useful research. Evaluation of learning (program outcomes) is the type of research our profession could use more of. The basic premises followed in conducting the research were sound. The test which was developed was reliable and appropriate statistics were used in analyzing the data. I was curious as to why only 44 teachers out of a possible pool of 127 participated in the research. The researchers are aware of the limitations this presents to the research.

My major concern about this research was the test developed to measure student learning. The items selected for the test were of .50 difficulty or greater. I'm not sure if you can accurately measure student learning if the items selected to measure student learning are chosen because of their extreme difficulty. With this type of test you can tell which individual students possess the greatest knowledge but I'm not sure if you are really measuring the knowledge of the entire pool of students.

THE EFFECTS OF TEACHING METHOD OR STUDENT ACHIEVEMENT OR ATTITUDE IN AN AGRICULTURAL COMPUTER PROGRAMMING COURSE

Tim Wiggins, Texas Tech University

In general there has been on over reliance on survey research in Agricultural Education. I'm glad to see Tim use an experimental design in his research. This is to be commended. Tim also did a good job in summarizing the literature.

As a coach I would offer several suggestions for improving the clarity of the paper. They are:

1. Divide the objectives. Each objective has two or more parts. The paper would be easier to follow if the objectives were broken down further.
2. Describe the procedures used in developing the instruments used in the research.
3. Show raw scores along with F-values. Both raw scores and resulting F-values are of value in analyzing the findings.
4. Report the results and conclusions in two different sections.
5. Be conservative in arriving at implications.
6. Provide more detail about the different treatment groups involved in the study.
7. Be careful to make generalizations only to the population from which sample is drawn.
8. Watch the use of terms such as "relationships" when talking about differences.
9. Be careful when using multiple ANOVA tests. This increases the probability of making a Type I error. Regression analysis might be considered.

THE EFFECTS OF TEMPERATURE AND PROTECTIVE CLOTHING UPON STUDENT PERCEPTIONS OF THE MECHANICS LEARNING ENVIRONMENT

Stanley Burke, Virginia Tech

This paper contained an excellent introduction which provided a foundation for the study. The review of literature was excellent. The design of the study was tight and appropriate. The conclusions and implications were tied closely with the objectives. This is one of the "most sound" papers which I have reviewed. It would be good reading for graduate students who want to see how to design and report research.

The main suggestion has to do with how the data is presented in the tables. I had to read the tables several times to determine the means and ranks. The research may want to consider reorganizing the tables to improve their clarity. I would also be interested in knowing what the highest possible score was.

VARIABLES AFFECTING THE ACHIEVEMENT OF STUDENTS MAINSTREAMED IN VOCATIONAL AGRICULTURE

Oscar Potter & J. David McCracken

The topic selected by the researchers is one worthy of research. At times I am concerned by the selection of "trivial" problems which are researched. This topic is not one of those trivial ones. A number of correlation coefficients are used in the paper. The terminology used and interpretation of the correlations was correct. The multiple regression equation developed be the researchers was good.

Three suggestions are offered for improving the paper. The sampling procedures used were not clear to me. A better explanation of the sampling procedure would strengthen the paper. The researcher indicated a "qualitative" sample was also used. It was difficult to determine the purpose of this sample and how the date from this sample were handled. Finally, their could be more recommendations for practical application. All of the recommendations, with the exception of one, were for other research studies. Several of the findings in the paper would provide a foundation for specific recommendations for practicing teachers.

LOUISIANA VOCATIONAL AGRICULTURE TEACHERS' OPINIONS OF IN-SERVICE TRAINING

Joe Kotrlik

This research study appears to be well conceived and executed. Joe is to be commended for achieving a 100% response rate in the study. The reliability of his instrument is good. I wasn't sure what type of recommendations could be made based upon the demographic variables used but Joe did a good job of coming up with some sensible recommendation.

I personally have problems with studies which use large numbers of demographic variables in the analysis. When large numbers of these variables are used a person will nearly always find something significant. It is often difficult to explain the true significance of the findings. Even though I would not encourage the use of all the demographic variables used in the study Joe did have a handle on them.

There is nothing wrong with using a rating scale of 1 to 5 with one being the highest rating but the profession is accustomed to seeing scales with 5 being the highest score. Unless there was some powerful over-riding reason to use 1 as the highest number I would suggest reversing the scoring in future studies.

THIRD GENERAL SESSION

Ira Hicks - Presider
Fort Valley State College

Larry Arrington - Facilitator
University of Florida

Richard Baker - Reactor
Auburn University

III

PERSONAL, ORGANIZATIONAL AND JOB (ENVIRONMENTAL) FACTORS AS RELATED TO BURNOUT AMONG EXTENSION AGENTS IN OHIO

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Vocational Agriculture Instructor
Suncoast High Community School, Riviera Beach, Florida

L. H. Newcomb
Professor
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INTRODUCTION

Extension agents in the Ohio Cooperative Extension Service are faced with reduced funding, fewer clientele and increased service demands from those they serve. The work environment generated by these conditions results in job stress and, consequently, the agent may experience burnout on the job. It is important that Extension administrators know the incidence of burnout among Extension agents. Before administrators can begin to develop various interventions to alleviate burnout among these agents, a clearer understanding of the factors associated with burnout is needed.

Related literature and research have indicated that problems associated with burnout have resulted in turnover, absenteeism and job dissatisfaction (Pines, 1981). Clark (1981) reported that during the period 1971 to 1981, there was a 14% annual rate of turnover among agents in the Ohio Cooperative Extension Service, with job dissatisfaction a possible factor. Could burnout, therefore, be a problem among extension agents in the Ohio Cooperative Extension Service? Considering the rate of turnonver, the changing pattern of funding for the organization, demands by clientele and demands for accountablity of agents in the Ohio Cooperative Extension Service.

PURPOSE AND OBJECTIVES

The major focus of the study was to determine the extent of burnout among extension agents in Ohio. Furthermore, the study sought to examine the extent to which burnout was related to major personal, organizational and job (environmental) characteristics.

The study included the following variables:

1. Independent Variables

    a. Personal factors: age, sex, marital status

    b. Organizational factors
       Job Satisfaction
       Job Performance
       Work Overload

c. Job (environmental) factors:
Skill Variety
Job Autonomy
Task Identity

II. Dependent Variable

Burnout

Objectives

The specific objectives directing this investigation were:

1. To determine the level of burnout among extension agents in the Ohio Cooperative Extension Service.

2. To determine whether there were differences in the levels of burnout among extension agents in agriculture, home economics and 4-H.

3. To determine the extent to which burnout was associated with personal factors: age, sex and marital status.

4. To determine the extent to which burnout was associated with organizational factors: job satisfaction, work overload and job performance.

5. To determine the extent to which burnout was associated with job (environmental) factors: skill variety, job autonomy and task identity.

PROCEDURE

Population and Sample

The target population for the study consisted of Extension agents in the 88 counties of Ohio (N = 241). This population included agriculture agents (N = 83), home economics agents (N = 85) and 4-H agents (N = 73).

A random sample of 101 agents was drawn for inclusion in the study. The sample for the study, therefore, consisted of 34 agriculture agents, 33 home economics agents and 34 4-H agents.

Design of the Study

The design of the study was a combination of descriptive and correlational research. This design allowed the investigators to answer the research questions pertaining to the specific objectives. Data were collected to determine the level of burnout among extension agents. Relationships between personal, organizational, job (environmental) factors and burnout were calculated.

Instrumentation

Because of the distribution and location of the subjects under investigation, the most effective means of collecting the data was by mailed questionnaire. There were five sections of the data gathering instrument used in the study which drew on the earlier work of Maslach and Jackson (1978) for burnout (Part I), the job (environmental) factors instrument (Part II) by Hackman and Lawler (1971), Warner's (1973) modification of the Brayfield-Rothe job satisfaction instrument (Part III), and the work overload instrument (Part IV) by Osipow and Spokane (1982). Part V of the instrument was developed to gather demographic information. Data regarding job performance was not collected with the questionnaire. Rather, this variable was measured by using agents' performance rating scores obtained from the State Extension Office.

The burnout scale (Part I) measured three dimensions of burnout that were reported to be independent of one another (Maslach, 1971). These dimensions were emotional exhaustion (e.g., "I feel emotionally drained from my work."), depersonalization (e.g., "I have become more callous toward people since I took this job."), and personal accomplishment (e.g., I deal very effectively with the problems of my clientele."). Each statement in the three dimensions was rated twice, once for frequency of occurrence which ranged from "Never" (0) to "Everyday" (6). The second rating was for the intensity of the experience, ranging from "Very Mild" (1) to "Very Strong" (7).

Part II (Job Factors) consisted of eight items that measured skill variety, job autonomy and task identity of agents. The 14-item instrument that made up Part III measured job satisfaction using a five-point scale that ranged from "Most of the Time" (5) to "Rarely or Never" (1). The work overload instrument (Part IV) had ten items and used a five-point scale: 1 = "Most of the Time," and 5 = "Rarely or Never." Part V was designed to gather demographic data about the agents. It sought information regarding age, sex, marital status, years of experience, area of program responsibility and major field of study.

Reliability and Validity of the Instruments

Cronbach's alpha reliability coefficients were calculated for the instruments to determine the extent to which they were reliable. The coefficients were: r = .83 (frequency) and r = .84 (intensity) for the burnout scale; r = .78 for skill variety; r = .58 for task identity; r = .55 for job autonomy; r = .91 for job satisfaction; and r = .83 for the work overload instrument. Because of the exploratory nature of the study, the low reliability coefficients for job autonomy and task identity were acceptable (Nunnanly, 1967).

These instruments were also judged to be valid. The burnout instrument was reported by Maslach and Jackson (1982) to have content, concurrent and predictive validity. The subscales of skill variety, job autonomy and task identity were validated in an earlier study by Suandi (1982) on agents in the Ohio Cooperative Extension Service. Bowen and Warmbrod (1980) validated the job satisfaction instrument in a national study of job satisfaction of teacher educators in agriculture, and

Kittrell (1980) also validated the satisfaction scale on a study of agents' interest themes in the Ohio Cooperative Extension Service. The scale, work overload, was reported to have content validity by Osipow and Spokane (1982).

Data Collection

Data were collected by mailed questionnaires. Ninety-one of the 101 instruments were returned, and eighty-nine (88%) were usable. A post card follow up and telephone contact were necessary in order to receive this rate of response. Data were also collected from two of the ten non-respondents for the purpose of determining possible differences between the respondents and non-respondents. Examination of the data indicated no significant differences between the respondents and non-respondents. Therefore, results were generalized to the population investigated.

Data Analysis

Frequencies, percentages, measures of central tendency, variability and relationships were used to organize, simplify and summarize the data. Analysis of variance was used to compare the groups on selected variables, and step-wise multiple regression was used to determine the best single predictor of burnout.

RESULTS

Level of Burnout Among Extension Agents in the Ohio Cooperative Extension Service

Extension agents in Ohio were found to experience a low to moderate level of burnout on the three subscales that made up the burnout instrument. More than 80% of the agents who responded to the survey received scores that placed them in the lower to middle third of the scores, hence they were found to experience a low to moderate level of burnout. Less than 20% of all agents scored in the upper third of the scores indicating a high level of burnout.

Emotional Exhaustion: Frequency and Intensity

The majority (54%) of the agents experienced a low level of burnout as measured by the emotional exhaustion: frequency subscale (Table 1).

Fewer agents (12%) obtained scores in the upper third indicating a high level of burnout. The overall mean score for all agents on the frequency dimension was 17.85 (scores could range from 0-54); the standard deviation was 9.24.

On the intensity dimension, as shown in Table 1, one-third of the agents were found to experience a low level of burnout while close to half of the agents (46%) experienced a moderate level of burnout. The overall mean score was 27,79 (scores could range from 0-63); the standard deviation was 12.30.

Table 1

Distribution of Burnout Scores

Dimension of Burnout	Level of Burnout								Means and Standard	
	Lower Third		Middle Third		Upper Third		Total		Standard Deviation	
	n	%	n	%	n	%	n	%	X	S.D.
Emotional Exhaustion:										
Frequency	48	54	30	34	11	12	89	100	17.85	9.24
Intensity	33	37	41	46	15	17	89	100	27.79	12.30
Depersonalization:										
Frequency	61	68	21	24	7	8	89	100	4.44	4.29
Intensity	52	58	27	30	10	12	89	100	6.79	5.93
Personal Accomplishment:										
Frequency	44	49	30	34	15	17	89	100	38.96	5.44
Intensity	44	49	31	35	14	16	89	100	42.88	5.94

Depersonalization: Frequency and Intensity

Sixty-eight percent of the agents experienced a low level of burnout on the frequency dimension. Less than one-third (24%) had a moderate level of burnout. Eight percent of the agents experienced a high level of burnout. The mean score on the frequency dimension was 4.44 (scores could range from 0-30); the standard deviation was 4.29.

For the intensity dimension of depersonalization, 58% of the agents experienced a low level of burnout and close to one-third of the agents (30%) experienced a moderate level of burnout. The mean score was 6.79 (scores could range from 0-35); the standard deviation of 5.93 (Table 1).

Personal Accomplishment: Frequency and Intensity

Scores on this subscale were interpreted inversely as compared to scores for emotional exhaustion and depersonalization. The lower the scores, the higher the levels of burnout experienced. One-third of the agents experienced a moderate level of burnout on the personal accomplishment: frequency dimension. Forty-nine percent of the agents were found to experience a low level of burnout on the personal accomplishment: frequency dimension. The mean score for the frequency dimension of this subscale was 38.96 (scores could range from 0-48); the standard deviation was 5.44. On the intensity dimension of this subscale, 84% of the agents experienced a low to moderate level of burnout and 16% had scores that placed them in the high level of burnout (Table 1).

Level of Burnout by Age

Tables are not provided for the analysis of burnout by age, sex, marital status and program responsibility due to space limitations.

On the three subscales of burnout (both frequency and intensity; except for personal accomplishment: frequency), the younger, 20-30 year old agents experienced significantly higher levels of burnout than the older agents (31-40 years of age, 41-50 years of age or 51 and over).

Level of Burnout by Sex

Males and females were burned out to the same extent.

Level of Burnout by Marital Status

Single agents experienced significantly higher levels of burnout than married agents on the following dimensions of burnout: emotional exhaustion: frequency and intensity and depersonalization: frequency. There were no differences on the other dimensions.

Level of Burnout by Area of Program Responsibility

4-H agents experienced significantly higher levels of burnout than agriculture or home economics agents. The mean scores obtained by 4-H agents on the frequency and intensity dimensions of the burnout scale (except for personal accomplishment: frequency) were significantly higher than the scores received by home economics and agriculture agents.

Relationships Between Age, Sex and Marital Status and Burnout

Table 2 contains Pearson correlation coefficients that indicate a low negative relationship between skill variety and depersonalization, a moderate positive relationship with personal accomplishment and a negligible positive relationship with emotional exhaustion.

There were also low to moderate negative relationships between job autonomy and burnout.

Except for the depersonalization subscale, Pearson product moment correlations were negligible and negative between task identity and burnout; they were negative and low with the depersonalization subscale.

Relationships Between Organizational Factors and Burnout

Moderate to substantial negative relationships were found between job satisfaction and burnout. The data in Table 2 indicate that as the levels of job satisfaction increased, burnout decreased.

Low to moderate positive relationships (Table 2) exist between work overload and burnout (emotional exhaustion and depersonalization). Negligible negative to low positive relationships were found between job performance and burnout.

Stepwise Multiple Regressions Analysis

Job satisfaction was the best single predictor of burnout when all significant independent variables from the earlier correlations were entered in a step-wise regression equation. It accounted for 31% of the variance on the emotional exhaustion subscales (Tables 3 & 4) and over 20% on the depersonalization subscales. It was also the only variable that explained variance for personal accomplishment: frequency (28%); it explained 18% of the variance in the personal accomplishment: intensity scores (tables not provided in this paper due to space limitations).

Table 2

Relationship[a] Between Age, Sex, Marital Status, Job (Environmental) Factors, Organizational Factors and Burnout

Variable	Burnout n = 89					
	Emotional Exhaustion:		Depersonalization:		Personal Accomplishment:	
	Frequency	Intensity	Frequency	Intensity	Frequency	Intensity
Age	-.33***	-.31***	-.41***	-.44***	.07	.19*
Sex	.09	.17*	-.09	-.08	-.15	-.06
Marital Status	-.22**	-.23**	-.18*	-.18*	.04	.06
Skill Variety	.05	.01	-.22**	-.28**	.35***	.34***
Job Autonomy	-.33***	-.30**	-.18**	-.21*	.29**	.31***
Task Identity	-.03	-.04	-.20*	-.24**	-.09	.07
Job Satisfaction	-.56***	-.54***	-.48***	-.52***	.53***	.43***
Work Overload	.43***	.32***	.21*	.21*	-.14	.04
Job Performance	-.03	.01	-.03	-.02	.10	.09

[a] All correlations are Pearson product moment correlations except for the variable age where the correlation is the Spearman.

*p < .05; **p < .01; ***p < .001.

Table 3

Step-Wise Multiple Regression of Emotional Exhaustion: Frequency (Burnout) on Three Significant Variables

Independent Variables Entered Step-Wise in Equation	Multiple R	R^2	R^2 Increment	F*
Job Satisfaction	.5634	.3174	.3174	40.5
Work Overload	.6416	.4116	.0942	30.0
Age	.6623	.4386	.0270	22.1

$*p < .05$.

Table 4

Step-Wise Multiple Regression of Emotional Exhaustion: Intensity (Burnout) Scores on Three Significant Variables

Independent Variables Entered Step-Wise in Equation	Multiple R	R^2	R^2 Increment	F*
Job Satisfaction	.5499	.3024	.3024	37.7
Sex	.5900	.3481	.0460	23.0
Work Overload	.6146	.3778	.0297	17.2

$*p < .05$.

CONCLUSIONS

1. The majority of agents in the Ohio Cooperative Extension Service experience a low level of burnout. However, a significant minority ($\geq$ 12%) experience high levels of burnout which demand attention.

2. The 4-H agents as a group experience the most burnout; so do young agents and single agents.

3. Agents who are satisfied with their jobs don't have as much of a problem with burnout but as job satisfaction decreases, burnout increases.

RECOMMENDATIONS

1. Agents experiencing high and low levels of burnout should be interviewed to determine in each case how they cope or fail to cope with stress.

2. The Ohio Cooperative Extension Service should develop intervention strategies and determine their effectiveness. Suggested interventions are: develop on-the-job social support systems, provide training and counseling on successful coping strategies, provide ample opportunity for agents to alter their job responsibilities periodically.

3. Further analyze factors contributing to dissatisfaction (particularly with 4-H agents) and offer remediation.

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JOB SATISFACTION OF VOCATIONAL AGRICULTURE TEACHERS IN LOUISIANA

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JOB SATISFACTION OF VOCATIONAL AGRICULTURE TEACHERS IN LOUISIANA

Introduction

In recent years, there has been a chronic shortage of qualified vocational agriculture teachers in many states. The problem seems to be present for two reasons. One is that only about 50 percent of agricultural education graduates enter the teaching profession (Craig, 1983). The other reason is that there are numerous individuals leaving the profession. This exodus of vocational agriculture teachers from the profession implies dissatisfaction, at least with some aspect of teaching, to such a degree that other jobs appear to be more satisfying. According to Gruneberg (1976), there is a definite relationship between turnover and job satisfaction. It would seem, then, that identification of factors influencing teacher satisfaction would be an important focus for individuals seeking to reduce this turnover.

Several theories have been developed to explain job satisfaction. One is Expectancy Theory. This theory defines job satisfaction as the judgment an employee makes regarding the equity of the reward received for the effort expended. This, in turn, affects future performance (Lawler and Porter, 1967). The theory suggests that satisfaction is a function of two kinds of rewards, intrinsic and extrinsic.

With respect to these factors, Hadaway (1978/1979) reported that teacher satisfaction was dependent primarily on intrinsic factors, while dissatisfaction stemmed from extrinsic factors. However, Kaufman and Buffer (1978) concurred with Hall (1973) in their study of industrial arts teacher educators that any variable in the job situation could be both a satisfier and a dissatisfier.

The present study was designed to add to the research regarding teachers in Vocational agricultural education, by assessing job satisfaction of agriculture teachers in secondary institutions.

Objectives

The objectives of the study were:

1. Ascertain the job satisfaction of vocational agriculture teachers in Louisiana.

2. Identify the job factors that significantly affect overall job satisfaction.

3. Ascertain relationships between job satisfaction and selected demographic variables.

Methodology

The target population for this study was the vocational agriculture teachers in public secondary institutions in Louisiana. A random sample of 50 vocational agriculture teachers was drawn from the 1982-83 Louisiana State Department of Education Directory of Vocational Agriculture Programs and Teachers.

The instrument employed to assess job satisfaction was the long form of the Minnesota Satisfaction Questionnaire (MSQ) developed by Weiss, Dawis, England, and Lofquist (1967). The MSQ measures responses to 20 factors (intrinsic and extrinsic) that affect job satisfaction. The respondents were asked to check the response (very dissatisfied, dissatisfied, neutral, satisfied, very satisfied) that best indicated their degree of satisfaction with each item on the questionnaire. The determination of factors that were intrinsic and extrinsic was made by the instrument developers through factor analysis. However, they recommended conducting a supplementary factor analysis with each group being studied since the job related variables may load on different factors. A factor analysis was therefore conducted using the data in this study to confirm the intrinsic and extrinsic factor loadings suggested by Weiss, et al. (1967). The suggested intrinsic and extrinsic variables were confirmed. A standardized Cronbach's alpha reliability coefficient of .95 for this MSQ was computed using data from the group involved in this study.

The MSQ has established norm group percentile scores for a variety of occupations. Job satisfaction score comparisons can be made with a selected norm group that is similar to the one under study to determine the relative satisfaction to a general population of workers. Weiss, et. al., (1967) suggested that if there is not an occupational group similar to the one under study, comparisons should be made to the norm group entitled "Employed Non-Disabled." This group included skilled and unskilled blue collar workers, white collar workers, and professional personnel. When comparisons are made, a percentile score of .75 or higher indicates a high degree of satisfaction, a .25 or lower would represents a low level of satisfaction, and scores in between these reflect a moderate level of satisfaction.

In addition to the MSQ, a demographic information form was utilized to collect personal information from each teacher. The demographic variables included were:

1. Years of vocational agriculture completed by the teacher.
2. Annual income
3. School setting (rural/nonrural)
4. School enrollment
5. Marital status
6. Distance from hometown
7. Highest degree held
8. Years of vocational agriculture teaching experience
9. Type of institution from which teacher training was received
10. Tenure status

The instruments and a cover letter were mailed to all 50 teachers in the sample. Two weeks after the initial mailing, a telephone follow-up of non-respondents was conducted. A 90% usable response rate was obtained with 45 of 50 teachers responding.

Descriptive statistics were used in analyzing data relative to identifying satisfaction with the 20 job factors on the MSQ. Multiple regression analysis was employed to identify job factors which explained a significant portion of the variance of overall job satisfaction. A least squares analysis of variance with main effects only was used to determine if there was a difference in overall job satisfaction with respect to selected demographic variables.

Results

Data in Table 1 indicate that 40% of the teachers had mean overall satisfaction scores falling in the 70s. Most teachers (33 or 73.3%) reflected a general satisfaction score between 70 and 89. The mean general satisfaction score was 76.62. When compared to the "Employed Non-Disabled" group, the vocational agriculture teachers' general job satisfaction score fell into the

Table 1

Categories of General Job Satisfaction Score

Score Category	Frequency	Percent
50-59	2	4.4%
60-69	7	15.6%
70-79	18	40.0%
80-89	15	33.3%
90-100	3	6.7%
Total	45	100.0%

45th percentile, indicating a moderate level of job satisfaction. No teacher had a score lower than 58. Few teachers reflected a job satisfaction score of more than 90. Mean scale satisfaction scores are presented in Table 2. The highest score possible on each scale was 25. Looking at the raw scores, the teachers appeared to be least satisfied with advancement, company policies and practices, and compensation. The job facets they seemed to be most satisfied with were social service, moral values, and creativity.

The variables comprising a highly significant model accounting for a portion of the variance in the job satisfaction score are displayed in Table 3. This table presented the partial regression coefficients, *F* values and significance levels with respect to each variable's contribution to the model. The model reflected a $R^2 = .96$, $p < .01$. Seven of 20 job facets were included in this model. These were authority, responsibility, security, compensation, co-workers, supervision--technical, and working conditions.

Table 2

Vocational Agriculture Teachers Mean Score on Scales of the MSQ

Scale	Mean	SD
Intrinsic		
Social service	21.93	2.22
Moral values	21.66	2.44
Creativity	21.24	2.72
Ability utilization	21.22	2.80
Activity	21.22	2.52
Achievement	21.09	2.43
Variety	20.96	2.52
Responsibility	20.95	2.41
Independence	20.68	2.49
Authority	19.04	2.95
Social status	19.04	2.64
Co-workers	18.93	3.39
Recognition	17.28	4.57
Extrinsic		
Security	20.24	3.19
Supervision--Human Relations	18.22	4.76
Working conditions	17.22	4.93
Supervision--Technical	17.13	4.63
Company policies/practices	16.24	4.98
Advancement	15.44	4.72
Compensation	14.84	5.02

The resulting model was placed into PROC REG (SAS, 1982) to determine if multicollinearity problems existed among any of the independent variables. Upon examination of the multicollinearity diagnostics, no problems were observed. Therefore, the variables identified in the model were considered to have explained 96% of the variance in the general job satisfaction score.

Table 3

Multiple Regression Analysis of General MSQ Score by Scales of the MSQ

Job Factor	B	F	Prob > F
Authority	.64	18.39	0.0001
Responsibility	1.03	26.03	0.0001
Security	.33	4.03	0.0518
Compensation	.35	18.39	0.0001
Co-workers	.58	19.70	0.0001
Supervision--technical	.59	42.54	0.0001
Working conditions	.32	17.64	0.0002

Note. Total $R^2 = .96$, $p < .01$

Demographic data were also collected from the vocational agriculture teachers. A total of eight demographic variables from the teachers were used to determine if there was a significant difference in overall job satisfaction. The teacher demographic variables used in the analysis were:

1. Annual income
2. School setting (rural/nonrural)
3. School enrollment

4. Marital status

5. Distance from hometown

6. Highest degree held

7. Years of vocational agriculture teaching experience

8. Type of institution from which teacher training was received

The least squares analysis of variance using main effects only with no interactions was used to test the relationships of these demographic variables to job satisfaction as measured by the MSQ. Only the main effects were tested because there were not enough subjects in each cell to analyze all interaction effects.

A general satisfaction score, as measured by the MSQ, was used as the dependent variable in the analysis. Data in Table 4 show that a significant difference in job satisfaction with respect to school enrollment was found, $\underline{F}$ (1,29) = 3.92, $\underline{p} < .05$. In addition, data in Table 5 indicate that a significant difference in teacher job satisfaction was found regarding years of teaching vocational agriculture, $\underline{F}$ (1,29) = 4.09, $\underline{p} < .05$. An examination of the least squares means with regard to both these variables indicated that teachers teaching at larger schools tended to be less satisfied than teachers at smaller schools. Furthermore, teachers with more experience tended to be more satisfied with their jobs. No significant differences in overall job satisfaction were found with respect to the other demographic variables placed into the analysis.

Table 4

Least Squares Analysis of Variance of General Job Satisfaction by School Enrollment

Enrollment	*n*	Least squares means	Prob > *t*
Less than 200	13	81.05	.0173
200-599	20	79.51	.0297
600 or more	12	71.59	

Note. Pair-wise comparisons were made between "600 or more and the other two enrollment categories. The probabilities are placed with the categories compared to "600 or more."

Table 5

Least Squares Analysis of Variance of General Job Satisfaction by Teaching Experience

Years	*n*	Least squares means	Prob > *t*
0-6	11	69.75	.0078
7-14	22	76.32	.0416
15 or more	12	86.08	

Note. Pair-wise comparisons were made between "15 or more" and the other two categories. The probabilities are replaced with the categories compared to "15 or more."

Conclusions and Implications

Based on the findings of this study, vocational agriculture teachers inLouisiana appeared to be moderately satisfied with their jobs (45th percentile). Satisfaction was generally higher with intrinsic job factors while lower satisfaction levels tended to be associated with extrinsic job factors.

In addition, overall job satisfaction level was influenced by satisfaction with both intrinsic and extrinsic factors. This concurs with the findings of Hall (1972/1973) and Kaufman and Buffer (1978) related to intrinsic and extrinsic factors influencing job satisfaction. The findings reflected agreement with the Expectancy Theory posed by Lawler and Porter (1967) with respect to both intrinsic and extrinsic factors influencing job satisfaction. However, not all factors that have been identified as either intrinsic or extrinsic were included as comprising a model explaining a portion of the variation in one's overall job satisfaction. This suggests that fewer job related variables may be creating the fluctuations in job satisfaction among these teachers. Even though a teacher may be satisfied with a variety of job related factors, there may be only a few that are associated with meaningful changes in the overall satisfaction of the population of these teachers. It should be noted that four of the seven factors identified as explaining 96% of the variance in job satisfaction were extrinsic factors (security, compensation, supervision-technical, working conditions). The remaining three intrinsic factors were authority, responsibility, and co-workers.

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Conclusions and Implications

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Some might support the assumption that teacher satisfaction with the job comes from satisfaction with the intrinsic elements of the job and is not influenced by extrinsic factors such as pay and working conditions. This does not appear to be the case when one examines the findings in this study. Extrinsic factors did indeed have a significant influence on the job satisfaction responses of these teachers.

The teachers seemed to be concerned about comfortable working conditions, competent supervision, job security, and the amount of pay received. Intrinsically, they desired to have control over their job and have the freedom to use their own judgment on the job. Moreover, the relationships between themselves and their co-workers were important to these vocational agriculture teachers.

For whatever reason, satisfaction was higher for more experienced teachers than for less experienced ones. This may be due to the fact that more experienced teachers may feel less anxiety and pressure to perform than newer teachers. In addition, as one becomes more familiar with the job, it seems likely that he/she would better adjust to job characteristics, interpersonal relationships, and requirements peculiar to teaching vocational agriculture. Moreover, values and expectations may well change as the teacher grows older. This, in turn, could impact on teacher job satisfaction. This suggests that we in agricultural education may need to develop some specific types of programs to assist new teachers in adjusting to teaching vocational agriculture for more satisfying experiences. Such satisfaction would appear to lessen teacher attrition.

It seems, as well, that teachers teaching in smaller schools are more satisfied with teaching vocational agriculture. This statement may be revealing an advantage of teaching vocational agriculture in a small school. Many would say this is no surprise due to the assumption that smaller schools seem to have less disciplinary problems, better co-worker relations, and less pressures. In addition, more of what teachers like, such as autonomy and responsibility, may be present in smaller schools. Moreover, it seems likely that smaller schools, usually found in more rural areas, may place more emphasis on agriculture than larger, more urban schools.

Recommendations

Based on the findings of the study, the following recommendations are suggested:

1. Teacher educators should provide educational opportunities, such as inservice and graduate courses, for administrators and supervisors to enhance their competence in supervising vocational agriculture teachers. Consideration of what vocational agriculture teachers identify as areas of improvement would be important in developing topics.

2. Vocational agriculture teachers should be encouraged to develop positive working relationships with other teachers in the school in which they teach. Strategies for building interpersonal relations on the job should be an integral part of preservice and inservice educational experiences of these teachers.

3. Policy makers and administrators should give attention to the salary administration of these teachers since this category was the one with which the vocational agriculture teachers were least satisfied. This would involve not only giving consideration to dollar amounts, but also to how the salaries are administered. That is, determining salaries by including consideration of the job tasks and time requirements peculiar to teaching vocational agriculture should be addressed.

4. Future research should be conducted to determine if the job satisfaction of vocational agriculture teachers in Louisiana is similar to that of vocational agriculture teachers in the nation.

5. A study needs to be conducted to determine if job satisfaction has

any relationship to a person's performance or effectiveness as a vocational agriculture teacher.

6. Further job satisfaction research ought to be designed and completed considering teachers in other vocational education subject matter areas.

7. Effort should be made to ascertain why teachers in smaller schools and those with more experience tend to be more satisfied in teaching.

8. Researchers conducting future job satisfaction studies with vocational agriculture teachers may want to consider addressing the seven factors identified as accounting for 96% of the variance in overall job satisfaction. The evidence strongly suggests that identifying and assessing these factors may well give the researcher insight into teacher job satisfaction without considering other dimensions that offer no significant explanatory power.

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STATE AND NATIONAL OFFICERS' OPINIONS OF STATE SUPERVISION AND TEACHER EDUCATION IN AGRICULTURE

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Presented to:
Southern Research Conference in Agricultural Education
Mobile, Alabama
March 23-25, 1985

Running Head: STATE AND NATIONAL OFFICERS' OPINIONS

State and National Officers Opinions of State Supervision and Teacher Education in Agriculture

Introduction

Secondary education has recently been the focus of increased public scrutiny and concern. As evidence mounts that many of today's secondary students do not possess the necessary social and technical skills to function in a complex world, people are asking, "Do teachers possess the skills necessary to excel in the secondary classroom?".

Many studies such as "A Nation at Risk" have attempted to answer this question. Regardless of the answer, teacher educators and state supervisors in agricultural education must find answers to several other important questions. Are we providing a realistic, complete pre-service curriculum? Do we provide adequate supervision once a teacher leaves college? Is our system of in-service education prepared to upgrade teaching and technical skills in a rapidly changing agriculture? And most importantly, what can we as teacher educators and state supervisors do to improve teaching?

This study was initiated to find answers for these questions through an assessment of the opinions of state and national vocational agriculture teachers association officers. It was felt that state and national association officers would be in a good position to accurately judge the activities of teacher educators and state supervisors because they have a close working relationship with both groups.

Purpose and Objectives

The purpose of this study was to determine the attitudes of state and national officers of vocational agriculture teachers associations towards state supervision and teacher education in agriculture in the United States. The objectives for the study were:

1. To secure demographic information about state and national vocational agriculture teachers association officers.

2. To determine if differences exist in the perceptions of these officers towards state supervision and teacher education according to the levels of the demographic variables.

3. To determine the state and national officers' perceptions of teacher education and supervision in agriculture in the United States.

4. To determine if selected demographic variables are significantly associated with the officers' responses to selected statements. The statements indicated here involved teacher participation in state staff and faculty meetings, state staff and faculty participation in state teacher association board meetings, the officers' evaluation of the overall efforts of teacher educators and state supervisors, and changes in state staff and college/university services and activities over the past 5 years.

Procedures

The population (N=305) used consisted of officers of all state vocational agriculture teachers' associations and the National Vocational Agriculture Teachers Association who were teaching at the time of the study. The sample was drawn from the 1984-85 directory published by the National Vocational Agriculture Teachers Association.

Cochran's sample size formula resulted in a sample size of 110. A sample of 159 was used in the study in anticipation of a response rate as low as 70 percent. After the sample size was determined, a table of random numbers was utilized to select the sample.

A closed-form questionnaire designed to secure the information needed to satisfy the objectives of the study was developed. The instrument was field tested using 10 vocational agriculture teachers including 4 who were former state association officers. Changes indicated by the field test were incorporated into the final instrument.

Instrument reliability was calculated using Cronbach's Alpha and yielded the following estimates:

State supervision scale - $r = .87$
Teacher education scale - $r = .91$
Combined scale reliability - $r = .90$

After three mailings and a phone follow-up, a response rate of 99.3% was achieved. Since comparisons between mail respondents and phone respondents yielded no statistically significant differences, both groups were combined for data analysis.

The data were analyzed using descriptive statistics and one-way analyses of variance. The alpha level was set at .01 to alleviate the problems associated with multiple F-tests.

Findings

The officers were asked to rate the activities of state staff and university faculty in their state. The state staff statement that received the highest mean rating (1.785) related to the quality of the working relationship between state staff and teachers, while the statement that received the lowest mean rating (2.302) was "state staff's efforts in helping teachers improve the quality of their teaching".

The university faculty statement that received the highest mean rating (2.081) was "usefulness of workshops offered", while the statement that received the lowest mean rating (2.680) was "opportunity for agriculture teachers to have input in faculty ag. ed. policies". The responses are presented in Table 1.

Place Table 1 about here

Analyses of variance and post hoc Scheffe' tests produced only one significant relationship between demographic variables and the grand means of responses to Likert scale times. Officers who had received 0-2 visits from college/university faculty in the past five years responded significantly less positive (2.60) to teacher education questions than officers who had received 3-7 visits (2.04) or 8 or more visits (2.02).

The analysis of variance also revealed a significant F-test when the state supervision scale mean was used as a dependent variable and NVATA region was used as the independent variable. However, the Scheffe' test failed to reveal the source of the differences.

The officers were also asked to rank seven areas in which efforts by state staff and college/university faculty would be most likely to result in improvement in vocational agriculture programs in their state. These data are displayed in Table 2.

Place Table 2 about here

Recommendations

The following recommendations are made based upon the findings of this study:

1. The data indicate that those officers who were visited more often had higher opinions of college/university faculty activities. It is recommended that college/university faculty make a greater effort to visit teachers more frequently if they wish to improve the opinions of state and national officers towards their programs. This may also be true of vocational agriculture teachers in general.

2. University faculty received lower ratings on all seven areas than the ratings received by state staff. Even though some of the items may not be a responsibility of teacher educators in all states, it appears that most of the activities are. It is recommended that university faculty examine their own activities in the areas covered by this study in order to determine if improvements should be made.

3. It is recommended that a similar study be conducted using a population of vocational agriculture teachers who are not state or national officers of agriculture teacher associations. This would determine what differences, if any, exist between the opinions of officers and the teachers they represent.

Table 1

Ratings of Statements About State Department Staff and University Faculty

State Staff Statement	SD	Mean*	n
1. Usefulness of workshops offered	.758	1.993	142
2. How well state staff represents vocational agriculture to those outside the profession	.908	1.932	148
3. Quality of working relationship between state staff and vo. ag. teachers	.882	1.785	149
4. Quality of communications between state staff and vo. ag. teachers	.873	1.953	149
5. Opportunity for vo. ag. teachers to have input in state ag. ed. policies	.979	2.201	149
6. State staffs' efforts in helping teachers improve the quality of their teaching	.957	2.302	149
7. State staffs' efforts in helping teachers get up-to-date information	.968	2.235	149

*excellent = 1, good = 2, fair = 3, poor = 4, and unacceptable = 5

Table 1 (continued)

Ratings of Statements About State Department Staff and University Faculty

University Faculty Statement	SD	Mean*	n
1. Usefulness of workshops offered	.844	2.081	136
2. How well the faculty represents ag. ed. to those outside the profession	.998	2.197	147
3. Quality of working relationship between faculty and vo. ag. teachers	.991	2.102	147
4. Quality of communications between faculty and vo. ag. teachers	1.000	2.286	147
5. Opportunity for vo. ag. teachers to have input in faculty ag. ed. policies	1.060	2.680	147
6. Faculty's efforts in helping teachers improve the quality of their teaching	.997	2.395	147
7. Faculty's efforts in helping teachers get up-to-date information	.965	2.422	147

*excellent = 1, good = 2, fair = 3, poor = 4, and unacceptable = 5

Table 2

Rank Order of State Staff and Faculty Efforts Most Likely to Result in Improvement in Vocational Agriculture Programs

Group Effort	Mean[a]	S.D.
State Staff		
More money for state staff activities	2.86	1.69
More state staff	3.46	2.40
More teacher visits	3.99	1.73
More support staff	4.09	1.93
Better communications	4.39	1.98
More workshops	4.51	1.73
More input from teachers	4.68	1.79
College/university faculty		
More money for faculty activities	3.05	1.90
More workshops	3.80	1.96
More teacher visits	3.96	1.96
Better communications	4.07	2.05
More faculty	4.10	2.10
More input from teachers	4.12	2.05
More support staff	[illegible]4	1.82

[a] 1 = most likely, 7 = least likely

VOCATIONAL AGRICULTURE ENTRY-YEAR TEACHERS' AND ENTRY-YEAR ASSISTANCE COMMITTEE MEMBERS' PERCEPTIONS OF THE OKLAHOMA ENTRY-YEAR ASSISTANCE PROGRAM (HB1706)

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INTRODUCTION

The Entry-Year Assistance Program (EYAP) is a relatively new approach for improving the quality of teachers in Oklahoma. It was introduced by the Oklahoma Teacher Reform Act of 1980 (House Bill 1706), which was proposed to improve the quality of teachers in accredited schools through implementing additional licensing and certification requirements. (Other states may refer to this type of program as Teacher Induction Program.)

A licensed teacher must participate in the EYAP during the initial year of teaching in an accredited school. This is performed under the guidance and assistance of the Entry-Year Assistance Committee (EYAC) in order to qualify for an Oklahoma Teaching Certificate.

Need for the Study

Since the Entry-Year Assistance Program was a new concept to Oklahoma education, data had not been elicited, analyzed, or reported which would reflect the perceptions of the EYAP by those who had participated as vocational agriculture EYAC members or Entry-Year Vocational Agriculture Teachers (EYT's).

The results of this study should provide decision makers and leaders in the field of Education with valuable information regarding Entry-Year Assistance Programs (or Teacher Induction Programs). Some states have implemented similar Teacher Induction Programs and many other states are fully considering implementing similar programs. This is a landmark study which analyzed specifically a subject matter area (vocational agriculture) within the Oklahoma Entry-Year Assistance Program and the study obtained the perceptions of everyone who had participated in this new program since its implementation.

OBJECTIVES OF THE STUDY

1. To identify the perceptions of the EYAC members (teacher consultants, administrators, and teacher educators) and the Entry-Year Vocational Agriculture Teachers concerning the EYAP.
2. To determine whether or not the EYAC provided needed assistance to the Entry-Year Vocational Agriculture Teacher as perceived by the EYAP committee members.
3. To determine whether or not they received needed assistance from the EYAC, based on the perceptions of the Entry-Year Vocational Agriculture Teachers.

4. To determine the level of importance of the EYAP regarding the teachers' first year of teaching as perceived by the EYAC and the Entry-Year Vocational Agriculture Teachers.

5. To determine whether or not the evaluation/observation instrument provided a fair assessment of the Entry-Year Vocational Agriculture Teachers' teaching performance.

6. To determine the major strengths and major problems of the EYAP as perceived by the EYAC members and the Entry-Year Vocational Agriculture Teachers.

7. To determine whether or not meaningful parental input was a valuable consideration for determining certification of the Entry-Year Vocational Agriculture Teachers.

8. To determine the involvement of the EYAC's in working with the Entry-Year Vocational Agriculture Teachers in areas of staff development and time, as mandated by requirements of House Bill 1706.

9. To determine whether or not those involved in the EYAP had received any orientation as it related to the EYAP prior to becoming a part of the EYAP.

10. To determine whether or not the EYAC's and the Entry-Year Vocational Agriculture Teachers favored the continuance of the EYAP.

METHODS AND PROCEDURES

Population

To accomplish the purpose of this study, Entry-Year Vocational Agriculture Teachers and EYAC members for the academic years of 1982-83 and 1983-84 were surveyed. For the two year period there were a total of 67 Entry-Year Vocational Agriculture Teachers employed within the boundaries of the State of Oklahoma. To provide assistance and guidance to the Entry-Year Vocational Agriculture Teachers there were 67 teacher consultants who were assigned by their principals, 64 administrators who were selected by their local boards of education, and 14 teacher educators from Oklahoma State University (OSU), Cameron State University, and Panhandle State University. A total population of 212 participants were involved in the EYAP as it related to the vocational agriculture teachers' first year of teaching. Of the total population of 212 participants, 205 (96.69%) responded to the telephone interview (Table I). Several attempts were made to contact the remaining seven (3.31%) prospective respondents. However, the investigator was not able to locate their whereabouts because their new addresses and telephone numbers were unknown.

The list of the Entry-Year Vocational Agriculture Teachers and the EYAC members were obtained from several sources. The list of the Entry-Year Vocational Agriculture Teachers and EYAC members for the academic years of 1982-83 and 1983-84 were obtained from the College of Education and the office of the EYAP Coordinator for Vocational Agriculture, OSU. A list of the 1982-83 and 1983-84 Entry-Year Vocational Agriculture Teachers who graduate from Cameron State University and Panhandle State University and their EYAC members were obtained from their respective universities.

TABLE I

FREQUENCY DISTRIBUTION OF RESPONDENTS BY PROFESSION

Profession	Population Size	Respondents	
		N	%
Teacher Consultants	67	65	30.66
Administrators	64	62	29.24
Teacher Educators	14	14	6.60
Entry-Year Vo-Ag Teachers	67	64	30.19
Totals	212*	205	96.69

*Of the 212 individuals eligible to be included in this study, two teacher consultants, two administrators, and three Entry-Year Vo-Ag Teachers could not be located to be interviewed.

Development of Instrument

The instrument developed contained general questions seeking qualitative and quantitative information to determine the Entry-Year Vocational Agriculture Teachers' and the EYAC members' perceptions of the EYAP.

The major concern was how to administer the instrument in order to obtain a high percentage of responses. Two methods of obtaining responses were studied: mailed questionnaires and telephone interviews. In order to determine which method to use in collecting data, input from a research report which was conducted by Finley and Key (1983) was considered. The report yielded the following information:

1. It is more economical to use the telephone to gather data.
2. The percent of valid responses will be approximately twice as great through the telephone interview as anticipated by mailed questionnaires.
3. An infinitely large population or a small population are both well suited to the telephone interview technique.
4. Interviews conducted over the telephone are highly reliable (p.4).

Because of these finding and the relatively small population to be surveyed, the data for this study were collected by telephone interview.

The next step was to compile a list of general questions that were relevant to determining the perception of the EYAP in vocational agriculture. These questions were derived from interviews with vocational agriculture teachers who served under the EYAP, and administrators, teacher consultants, and teacher educators who served on the EYAC for vocational agriculture teachers.

After development of the initial instrument, the faculty of the Agricultural Education Department of OSU reviewed it for content, applicability, and clarity. After receiving this input, revisions were made to strengthen the instrument. The next step was to determine the reliability of the instrument and make further revisions, if necessary.

Prior to the actual telephone interview, post cards were mailed to the 212 Entry-Year Vocational Agriculture Teachers and EYAC members describing the purpose of the study, approximately when they would be contacted, and eliciting their assistance. Another purpose for contacting the participants in this way was to allow them time to consider relevant aspects of the forthcoming interview, which provided more accurate information for the study.

Collection of Data

An introductory statement was designed to be used with the interview to ensure a collective understanding of the study by all respondents and to establish a specified structure for the interview.

Information obtained from the interviews provided the Entry-Year Vocational Agriculture Teachers' and the EYAC members' perceptions of the EYAC. The questions contained in the interview required answers on an interval scale with some short answers also being required.

Analysis of Data

The statistical treatment for all responses consisted of frequency distribution and percentages. The responses to questions on the instrument were of two types: (1) Qualitative, which requested responses such as: Definitely Yes, Probably Yes, Uncertain, Probably Not, or Definitely Not, and questions which elicited a "Yes" or "No" response and (2) Quantitative, which offered the respondents the opportunity to provide more than one response to a question.

All information collected was keypunched on International Business Machine (IBM) cards and a Statistical Analysis System (SAS) program was utilized initiating computations by the IBM System 3081, Model D computer.

FINDINGS

Respondents' Perceptions of Assistance Provided by the Entry-Year Assistance Program

A summary of the responses to questions pertaining to assistance (or lack of) provided by the EYAC members is presented in Table II.

TABLE II

SUMMARY OF RESPONDENTS' PERCEPTIONS RELATIVE TO ASSISTANCE EITHER PROVIDED BY OR NOT PROVIDED BY ENTRY-YEAR ASSISTANCE PROGRAM

Perception of Assistance	Frequency Distribution of Responses N(%)					TOTALS N(%)
EYAC members' perceptions on whether or not they provided needed assistance to EYT	Definitely Yes [illegible](50.35%)	Probably Yes 65(46.10%)	Uncertain 2(1.42%)	Probably Not 3(2.13%)	Definitely Not --	141(100.00%)
EYTs' perceptions as to whether or not they received needed assistance from EYAC	Definitely Yes 34(53.13%)	Probably Yes 23(35.94%)	Uncertain 2(3.12%)	Probably Not 2(3.12%)	Definitely Not 3(4.69%)	64(100.00%)
Individuals who provided most assistance based on perceptions of EYT	Teacher Consultant 22(34.38%)	Administrator 7(10.94%)	Teacher Educator 21(32.81%)	Another Experienced Teacher 4(6.25%)	Other 10(15.62%)	64(100.00%)
Times EYAC members were asked for assistance as perceived by EYAC members and the EYT	Never 19(9.27%)	1-5 59(28.78%)	6-10 30(14.63%)	11-15 23(11.22%)	More Than 15 74(36.10%)	205(100.00%)

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Respondents' Perceptions of the Importance of the Entry-Year Assistance Program

A summary of responses to questions pertaining to the importance of the EYAP is presented in Table III. A large majority of the respondents (88.78%) felt that the EYAP was important. The remaining respondents (11.22%) felt that the EYAP was less than important. When asked why the EYAP was important, the following reasons were given:

1. Provides an opportunity for consultation and discussion
2. Creates a feeling of security on the part of the Entry-Year Vocational Agriculture Teachers
3. Provides improved classroom management

The respondents who felt that the EYAP was not important were asked why they felt that way. The following reasons were given:

1. There was a lack of importance as viewed by the Entry-Year Vocational Agriculture Teachers and the EYAC members.
2. The EYAP involves too much time
3. The EYAP creates a feeling of apprehension on the part of the Entry-Year Vocational Agriculture Teachers

Respondents' Perceptions of the Evaluation/ Observation Instrument

Table IV summarizes the respondents' perceptions of the evaluation/ observation instrument. Two hundred and five respondents were asked if the evaluation/observation instrument provided a fair assessment of the Entry-Year Vocational Agriculture Teachers' abilities. An overwhelming majority (93.66%) of the respondents indicated that the evaluation/ observation instrument did provide a fair assessment of the Entry-Year Vocational Agriculture Teachers' abilities.

Respondents' Perceptions of the Major Strengths and Problems of the Entry-Year Assistance Program

A summary of responses to questions pertaining to major strengths and problems is also presented in Table IV. Of the 205 respondents, 114 (55.61%) respondents indicated the major strengths to be:

1. Assistance from the EYAC (as a whole)
2. Guidance in making decisions
3. Moral support that is offered by the EYAC

Based on the question pertaining to the major problems with the EYAP, 65 (31.71%) respondents indicated that they did not perceive any major problems with the EYAP. Eighty-four (40.97%) respondents indicated the following as major problems:

1. Amount of time required
2. Lack of understanding the total vocational agriculture program by the teacher consultants and administrators.
3. Insufficient overall assistance

Respondents' Perceptions of Selected Components of the Entry-Year Assistance Program

A summary of responses to questions pertaining to selected components of the EYAP is presented in Table V. When asked whether or

TABLE III

SUMMARY OF RESPONDENTS' PERCEPTIONS OF IMPORTANCE OR LACK OF IMPORTANCE OF ENTRY-YEAR ASSISTANCE PROGRAM

Perception of Importance	Frequency Distribution of Responses N(%)				TOTALS N(%)
Importance of EYAC	Very Important 116(56.59%)	Important 66(32.19%)	Less Than Important 17(8.29%)	Unimportant 6(2.93%)	205(100.00%)
Reasons EYAP is important	Provided Opportunity for Consultation and Discussion of Problem 71(34.63%)*	Created Feeling of Security on Part of EYT 70(34.15%)*	Improved Classroom Management 45(21.95%)*		
Reasons EYAP is not important	Lack of Importance as Viewed by EYT and EYAC Members 11(5.37%)**	Too Much Time Involvement 5(2.44%)**	Created Feeling of Apprehension on Part of EYT 5(2.44%)**		

*Respondents could indicate more than one response as to why the EYAP is important, therefore there is no total N or %.

**Only respondents who felt EYAP was not important responded to this question, therefore there is no total N or %.

TABLE IV

SUMMARY OF RESPONDENTS' PERCEPTIONS OF OBSERVATION INSTRUMENT AND MAJOR STRENGTHS AND PROBLEMS CONCERNING ENTRY-YEAR ASSISTANCE PROGRAM

Respondents' Perceptions	Frequency Distribution of Responses N(%)					TOTALS N(%)
Did evaluation/observation instrument provide a fair assessment of EYTs' abilities?	Definitely Yes 82(40.00%)	Probably Yes 110(53.66%)	Uncertain 3(1.46%)	Probably Not 7(3.42%)	Definitely Not 3(1.46%)	205(100.00%)
Reasons why evaluation/observation instrument provided a fair assessment of EYT	Covered All Categories of Vocational Agriculture 107(52.19%)*	Provided an Opportunity to Make Comments 34(16.58%)*	Did Not Remember the Instrument 26(12.68%)*			
Major strength of EYAP	Assistance From EYAC as a Whole 47(22.93%)	Assistance From TC 36(17.56%)	Guidance in Making Decisions 35(17.07%)	Moral Support 32(15.61%)	Other 55(26.83%)	205(100.00%)
Major problems of EYAP	No Major Problems 65(31.71%)	Amount of Time Required 38(18.54%)	Overall Assistance Insufficient 16(7.80%)	Lack of T.C. and Administrative Understanding of Vo Ag Program 16(7.80%)	Other 70(34.15%)	205(100.00%)

*Not all respondents gave reasons why the evaluation/observation instrument provided a fair assessment of the EYTs' abilities, therefore there is no total N or %.

TABLE V

SUMMARY OF RESPONDENTS' PERCEPTIONS OF SELECTED COMPONENTS OF ENTRY-YEAR ASSISTANCE PROGRAM

Components	Frequency Distribution of Responses N(%)					TOTALS N(%)
Continuance of EYAP	Strongly Favor 117(57.08%)	Tend to Favor 64(31.22%)	Uncertain 4(1.95%)	Tend to Oppose 12(5.85%)	Strongly Oppose 8(3.90%)	205(100.00%)
Opportunity to adjust and improve	Definitely Yes 159(77.56%)	Probably Yes 41(20.00%)	Uncertain 2(0.98%)	Probably Not 3(1.46%)	Definitely Not --	205(100.00%)
Assisted in classroom management	Definitely Yes 111(54.15%)	Probably Yes 73(35.61%)	Uncertain 4(1.95%)	Probably Not 13(6.34%)	Definitely Not 4(1.95%)	205(100.00%)
Parental input consideration	Definitely Yes 82(40.00%)	Probably Yes 65(31.71%)	Probably Not 39(19.02%)	Definitely Not 19(9.27%)		205(100.00%)
Areas of improvement identified	Yes 54(26.34%)	No 151(74.66%)				205(100.00%)
Received orientation	Yes 119(58.05%)	No 86(41.95%)				205(100.00%)
Teacher consultant provided at least 72 hours of assistance and consultation	Yes 38(59.38%)	No 26(40.62%)				64(100.00%)

not the respondents favored the continuance of the EYAP, 181 (88.30%) respondents indicated that they "Favor" or "Strongly favor" the continuance of the EYAP.

CONCLUSIONS

The analysis of data and subsequent findings were the basis for the following conclusions:

1. It was concluded that the EYAC's were composed of experienced educators, since all members had extensive years of teaching and/or administrative experience and/or teacher education experience.

2. Since an overwhelming majority of the EYAC members believed they provided needed assistance to the Entry-Year Vocational Agriculture Teacher and an overwhelming majority of the Entry-Year Vocational Agriculture Teachers believed they received needed assistance, it was concluded that adequate assistance was provided to the Entry-Year Vocational Agriculture Teachers.

3. Since approximately equal numbers of EYT's indicated that teacher consultants and teacher educators provided the most assistance and only 11% indicated that the administrators provided the most assistance, it was concluded that teacher educators and teacher consultants provided the most assistance to the Entry-Year Vocational Agriculture Teacher.

4. Based on the perceptions of the EYAC members and the Entry-Year Vocational Agriculture Teachers, it was concluded that the EYAP was important regarding the teachers' first years of teaching.

5. After reviewing the findings, it was concluded that a vast majority of the respondents interviewed believed the evaluation/observation instrument used to evaluate the Entry-Year Vocational Agriculture Teachers' performance provided a fair assessment of his/her abilities. Although it was apparent in the findings that a majority of the respondents felt the instrument covered all categories of vocational agriculture, it was concluded that only a few (28.57%) of the teacher educators agreed that the instrument covered all categories of vocational agriculture. The respondents who indicated that the evaluation/observation instrument did not provide a fair assessment indicated a need for refinement.

6. Due to the responses elicited from the respondents, it was concluded that the major strengths of the EYAP were:
   a. Assistance from the EYAC (as a whole)
   b. Moral support
   c. Guidance in making decisions

7. Based on a review of the findings, it was concluded that the "Amount of time required" was the major problem with the EYAP. However, more specifically, the teacher educators believed the "Overall assistance of the EYAC was insufficient".

8. Since over 97% of all respondents indicated that the committee members provided reasonable opportunity for the Entry-Year Vocational Agriculture Teachers to adjust and improve as the year progressed, it was concluded that the Entry-Year Vocational Agriculture Teachers were definitely provided reasonable opportunity to adjust and improve as the year progressed.

9. Since approximately 90% of all respondents indicated that the EYAP assisted in all matters concerning classroom management, it was

concluded that the EYAP strongly assisted the Entry-Year Vocational Agriculture Teachers in all matters of classroom management.

10. Since over 70% of the respondents indicated that parental input was a valuable consideration for determining certification, it was concluded that parental input was valuable in determining certification of the Entry-Year Vocational Agriculture Teachers.

11. Since over 70% of the respondents indicated that areas of needed improvement were not identified and that inservice or staff development programs were not recommended at the third EYAC meeting, it was concluded that inservice or staff development programs were not emphasized to the extent needed.

12. Since only a small majority of the respondents indicated that they had received orientation as it related to the EYAP prior to becoming a part of the EYAP, it was concluded that there was a lack of orientation received as perceived by the EYAC members and the Entry-Year Vocational Agriculture Teachers.

13. Since 40% of the Entry-Year Vocational Agriculture Teachers indicated that the teacher consultants did not spend the required 72 hours of his/her time in providing assistance, it was concluded that many teacher consultants did not provide the assistance required by HB 1706.

14. It was concluded that the structure and organization of the EYAP was adequately planned, since 40% of the respondents indicated that no changes were needed.

15. It was concluded that the EYAP should be continued, based on the opinion of 88% of the respondents.

16. There was sufficient evidence to conclude that the respondents (including the teacher consultants, administrators, teacher educators, and Entry-Year Vocational Agriculture Teachers) basically possess like perceptions of the EYAP.

RECOMMENDATIONS

As a result of the conclusions drawn from the analysis and interpretation of data, the following recommendations are made:

1. Based on the conclusion that all EYAC members had extensive teaching, administrative, and/or teacher education experience, it is recommended that a high level of experience on the EYAC's be continued.

2. Based on the conclusion that adequate assistance was provided to the Entry-Year Vocational Agriculture Teachers, it is recommended that a high level of assistance be continued.

3. Based on the conclusion that teacher consultants and teacher educators provided the most assistance to the Entry-Year Vocational Agriculture Teachers, it was recommended that teacher consultants and teacher educators continue their responsibilities of providing needed assistance. Additionally, the administrators should not only continue those responsibilities, but should strive to devote more time to those particular endeavors.

4. Based on the conclusion of importance by all respondents, it is recommended that the EYAP definitely be continued.

5. Based on the conclusion that the evaluation/observation instrument provided a fair assessment of the Entry-Year Vocational Agriculture Teachers' performance, it is recommended that the use of the instrument be continued. However, based on teacher educators' concerns over completeness and individual comments on refinement, it is recommended that steps be taken to refine the instrument.

6. Based on the conclusions that the "Amount of time required" is a major problem with the EYAP, it is recommended that release time or other professional assistance be provided to the members of the EYAC's.

7. It was apparent that the Entry-Year Vocational Agriculture Teachers were provided reasonable opportunity to adjust and improve as the year progressed; therefore, it is recommended that the EYAC members continue providing this opportunity to the Entry-Year Vocational Agriculture Teachers.

8. It was concluded that the EYAP assisted in all matters concerning classroom management; therefore, it is recommended that assistance continue to be provided in the area of classroom management.

9. Based on the conclusion that meaningful parental input was a valuable consideration for determining certification, it is recommended that parental input continue to be strongly considered for determining certification and that the importance of parental input be stressed to all EYAC members.

10. Since inservice or staff development programs (which addressed the areas needed for Entry-Year Vocational Agriculture Teachers' improvement) were not recommended at the final committee meeting by the EYAC, every effort should be made to ensure that inservice or staff development programs are recommended at the final EYAC meeting.

11. Based on the findings that approximately one-half of the Entry-Year Vocational Agriculture Teachers and administrators and more than one-half of the teacher consultants were not oriented prior to becoming a part of the EYAP, it is recommended that an orientation program be implemented in the local schools to familiarize public school administrative and teaching personnel with specifications of the EYAP. It is further recommended that vocational agricultural teacher training institutions implement an orientation program for entry-year teachers, since 41% had received no orientation.

12. It was indicated that many of the teacher consultants did not spend the required 72 hours of his/her time in providing assistance to the Entry-Year Vocational Agriculture Teachers; therefore, every effort should be made by the teacher consultants to spend the minimum 72 hours required providing guidance and assistance to Entry-Year Vocational Agriculture Teachers. It is further recommended that teacher consultants be allowed release time to perform duties, as mandated by House Bill 1706.

13. It is strongly recommended that the EYAP be continued, based on the indications that the EYAP provided:

- a. An opportunity for consultation and discussion of problems
- b. A feeling of security on the part of the Entry-Year Vocational Agriculture Teachers
- c. Assistance needed to improve classroom management
- d. Moral support
- e. Guidance in making decision (in addition to the respondents favoring continuance of the EYAP)

14. It was apparent that some of the teacher educators who served on the EYAC's for the Entry-Year Vocational Agriculture Teachers has no experience in vocational agriculture or in teacher education in higher education. Therefore, it is recommended that further research be conducted to determine if there was a difference in those EYAC's having agricultural education teacher educators and other faculty members.

RECOMMENDATIONS FOR ADDITIONAL RESEARCH

The following recommendations are made in regard to additional research. These recommendations are based on the examination of the findings of this study.

1. There should be similar studies conducted concerning other teaching discipline areas and the results compared with the findings of this study.
2. A follow-up study should be conducted with Entry-Year Vocational Agriculture Teachers and EYAC members, and the results compared with the findings of this study.
3. Specific research should be conducted to determine what assistance is needed by the Entry-Year Vocational Agriculture Teachers.
4. Specific research should be conducted to determine the kinds of assistance the EYAC members provided.
5. It is recommended that additional in-depth research be conducted to assess the usefulness of the evaluation/observation instrument as a source for determining strengths and weaknesses of the Entry-Year Vocational Agriculture Teachers.
6. Additional research should be conducted with emphasis on determining specific major problems within the EYAP.
7. Specific research should be conducted in order to determine obstacles which hinder assistance to Entry-Year Teachers by the EYAC.
8. Specific research should be conducted to determine how parental input was obtained and to determine the extent of the usefulness of parental input.
9. Specific research should be conducted to determine areas of needed improvement for Entry-Year Teachers and types of prescriptive programs for continued improvement and development.
10. Specific research should be conducted on the nature and extent of orientation programs designed to familiarize teacher consultants and administrators with the EYAP.
11. Specific research should be conducted to obtain perceptions of administrators relative to their role in the EYAP.
12. Specific research should be conducted to obtain perceptions of teacher consultants relative to their role in the EYAP.
13. Specific research should be conducted to obtain perceptions of teacher educators relative to their role in the EYAP.
14. Teacher training institutions should be surveyed to determine the nature and extent of undergraduate orientation to the EYAP.

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AN EXPERIMENTAL STUDY INVOLVING NINTH GRADE VOCATIONAL AGRICULTURAL STUDENTS IN THE ACQUISITION OF PSYCHOMOTOR SKILLS IN ARC WELDING UTILIZING THE THEORY OF DISTRIBUTED PRACTICE

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INTRODUCTION/NEED FOR THE STUDY

Alabama (1980), Minnesota (1964), Oklahoma (1972), and several other states recommend a cluster curriculum approach to providing exploratory experience for vocational agricultural students. The prime purpose of this approach is exposure of students to a variety of activities in the field of agriculture to assist them in making more realistic occupational choices of study by the time they are approaching the eleventh grade. Arc welding, basic woodworking, and small engine repair are three areas most generally clustered.

Other curriculum approaches in industrial arts as well as career education programs recommend the cluster concept. Florida (1980) industrial arts programs are recommended around the cluster curriculum areas of (1) manufacturing occupations, (2) construction occupations, (3) power and transportation occupations, and (4) graphic communication occupations. Tennessee (1977) and Virginia (1978) also recommend the cluster concept for their programs. Career education programs from Texas (1973), Oregon (1976), and New Jersey (1974), as well, recommend the cluster curriculum concept.

This cluster curriculum approach is an attempt to maximize the use of facilities, resources, and student time. Alabama has some 6,500 ninth grade students in this cluster program for which they recommend five hours of practice time in arc welding, alone. However, no scientific basis has been established to recommend a time interval structure for maximum utilization of this recommended practice time for student acquisition of elementary welding skills.

Focusing on cognitive learning, early research by Thorndike (1932), Cook (1934), Oseas and Underwood (1952) supported the theory that distribution of practice was more effective--at least for retention--than massed practice. Hovland (1940), based on his research, proposed a theoretical position for the superiority of distributed practice over massed practice, not only for retention but also for "acquisition." He noted the assumption that performance depends upon the positive learning minus the strength of the interfering process (inhibitory effects) and that the interfering tendencies decrease in strength with the passage of time more rapidly than do positive learning tendencies.

Hovland's explanation for more rapid acquisition of cognitive knowledge by distributed practice, centers on two key factors (1) performance factors and (2) learning factors. He noted that influences such as fatigue, refractory phases, and other things, mask the true extent of learning. Rest pauses could permit recovery from these effects and hence bring about more rapid learning. "Learning factors", Hovland further concluded, are opposed to these influences. During acquisition both incorrect (and therefore interfering) and correct associations are constantly being established. He explains that distrubuted practice may be effective because it permits a differential weakening of these two types of associations. Therefore, if, because of differential strength, the interfering associations weaken more rapidly than correct associations, a net gain in performance would result from interpolation of rest pauses.

With research in psychomotor skill development still in its infancy, Shinn (1971) conducted research utilizing young and adult farmers concerning the effects of course duration on the motor skill development of three complex arc welding tasks. He concluded the following (1) three course durations did not significantly effect arc welding performance of adults on a complex motor skill task, and (2) performance on three arc welding tasks was not significantly effected by the use of three ratios of practice time.

However, research by Shea and Morgan (1979) and Schendel (1979) lend support for the theory of distribution of practice in the psychomotor domain, coinciding with the generally accepted theoretical constructs associated with learning in the cognitive domain. The literature search yielded no study recommending set time frames for the distribution of practice in the specific area of welding, or in other areas of the psychomotor domain.

Althouse, Turnquist, and Bowditch (1967) note that techniques for evaluating and determining quality of welds fall into two classifications, destructive and nondestructive tests. One of the most commonly accepted destructive tests described by them, and by Johnson (1958), is the tensile test. The tensile test mechanically determines certain characteristics of the weld as the weld is subjected to a slowly applied force tending to pull it apart. One primary weld characteristic determined by this process is the tensile strength, measured in pounds per square inch. Tuttle (1966) defines tensile strength as "that property which enables a material to withstand a stress without fracturing or suffering permanent deformation."

Another destructive welding test, the nick-break test, introduced as an arc welding evaluation test in the 1930's and refined by the military (Sacks, 1943), is used primarily to investigate the internal characteristics of welds. Weld coupons are cut from a cross-section of the weld and nicked with a hacksaw on the edge at the center of the weld. Then the coupon is struck with sufficient force to cause the weld to separate, thus exposing the weldment for visual examination. An evaluation score card is then utilized to judge the weld.

The basic problem of this current study was not that of developing qualified welders. It was, in adhering to the theoretical constructs of the benefits of distributed practice, to determine if different methods of distributing practice influence the acquisition of elementary psychomotor skills in arc welding of ninth grade agriculture students.

OBJECTIVES OF THE STUDY

Specifically, the purpose was to determine what influence different distributions of welding practice time intervals had on the quality of welds made by ninth grade vocational agriculture students.

The following null hypothesis was investigated:

> Ho_1 The main effects of distributed practice time, 15-, 30-, and 45-minutes (independent variables), would not significantly influence the quality of butt welds as measured by the tensile strength test and the jury ratings on the evaluation score card for nick-break tests (dependent variables).

METHODS AND PROCEDURES

This study utilized a post-test only experimental design involving three experimental groups (N = 36). This design was selected, as recommended by Campbell and Stanley (1966), due to the situation of initial introduction of new material or experiences for which pre-tests in the ordinary sense are impossible or inappropriate. Equal number of subjects (12) were randomly assigned to groups, with random assignment to treatments.

The population consisted of 36 randomly selected first-year vocational agriculture students from a secondary school system in east central Alabama. The all-male population was 36 percent non-white, and represented the following age levels: 14 (36%), 15 (36%); 16 (17%); and 17 (11%). Thirty-six percent of the subjects were academically disadvantaged in that they were at least two grade levels behind academically. No subject reported previous hands-on experience in arc welding.

Instrumentation for the study consisted of two techniques. The tensile strength test and the nick-break test evaluation forms were utilized. The tensile test machine manufactured by Timius Olsen Company, Willow Grove, Pennsylvania (Serial #62548) in Auburn University's Mechanical Engineering Department was utilized in mechanically pulling the welds apart to determine their tensile strength. The Tinius Olsen Company, under contract to Auburn University, had recently calibrated the machine.

The Evaluation Score Card for Nick-break Tests, reported by Shinn (1973), was utilized by a three-member jury of experts as they subjectively evaluated the welds once they were mechanically broken in the tensile test. The jury had no knowledge of the results of the tensile strength test. A total of 100 points was possible on the score card from the following four-test criteria: penetration (30), crystal structure (30), slag inclusions (30), and visual inspection (10).

From his research, Conley (1938) concluded that the nick-break test and a modified nick-break test were highly correlated with the tensile test and eight other methods of testing and evaluating welds. For this current investigation, an inter-rater reliability was conducted utilizing a two-factor analysis of variance without replications. The resulting coefficient of .99 indicated strong agreement among the three judges in their evaluations of the welds done by these ninth graders.

Prior to beginning the interval welding practice sessions, subjects were exposed to basic content materials for five hours, to introduce and familiarize them with arc welding. Content materials and instructional procedures specified followed the recommendations of the James F. Lincoln Arc Welding Foundation prepared by Sellon and Matthews (1963). Basic content material covered the following: (1) The Development of Arc Welding; (2) How Arc Welding is Used; (3) Arc Welding Equipment and Supplies; (4) Learning to Weld; (5) Weaving and Paddling; (6) Making Welds in the Down-hand (flat) Position; (7) Making Butt Welds.

Students were then taken to the welding laboratory and given demonstrations on safety, use of equipment and accessories, setting the temperature, preparing to weld, striking the arc, running the bead, restarting an interrupted bead, recognizing a good bead, weaving, paddling, and making a butt weld.

Each student was allowed a total of 15 minutes supervised practice on striking an arc and running a bead prior to initiating timing of the interval practice sessions. Subjects were then randomly assigned to groups and randomly assigned to treatments. Subjects then maintained rigid practice schedules, with all groups receiving a total of five hours practice time.

Groups I, II, and III practiced welding 15-, 30-, and 45-minutes, respectively, each school day until they obtained their full five hours of practice. After three hours of practice in laying beads and restarting interrupted beads, their practice included making butt welds. Three nick-break tests were conducted on the subject's welds and evaluated. Shinn (1973), in recommending use of the nick-break test, concluded that practice without the knowledge of results has appeared to have very little effect upon individual performance. After the completion of each individual student's practice time, the following day a two-minute practice session was allowed before making the test butt weld.

Welders utilized were the Lincoln 225 amp, AC machines. Welding electrodes were E-60-13. The test metal was two pieces of 3/8" x 3" x 6" mild steel metal of approximately 60,000 pounds tensile strength per square inch. Directions for making butt welds as outlined by the Lincoln Arc Welding Foundation mentioned previously were followed. The test weld was made in the flat (down-hand) position by placing the two pieces of metal end-to-end and making the three-inch butt weld on one pass.

The Statistical Analysis System (SAS, 1980) programs were utilized in statistically analyzing all data reported in the study. The .05 alpha level was utilized to accept or reject the hypothesis.

RESULTS: FINDINGS, CONCLUSIONS, IMPLICATIONS

Findings

Main effects of treatment (15-, 30-, and 45-minute distributed practice intervals) and their interaction on the tensile strength test and on the nick-break test average jury ratings were analyzed. The tensile strength test scores and jury evaluation scores for the nick-break test evaluation were analyzed simultaneously in a multivariate analysis of variance (MANOVA) and separately in univariate analysis of variance (ANOVA). Results are displayed in Table 1.

Table 1

MANOVA and ANOVA of Tensile Strength and Nick-Break Test Jury Scores

Source	Multivariate		Univariate		
	df	F[a]	df	MS	F
Treatment	4	13.11*			
Tensile Strength			2	1884915968.00	6.20**
Jury Score			2	4870.53	32.18*
Error	64				
Tensile Strength			33	304240896.00	
Jury Score			33	151.34	

[a] Wilks λ criterion used to approximate F.

$^{*}p < .0001$

$^{**}p < .01$

Utilizing multivariate analysis of variance procedures, a significant difference was demonstrated among the effects of the three independent variables (15-, 30-, and 45-minute distributed practice intervals) on the two dependent measures (tensile strength test and nick-break test average jury evaluations) as determined by Wilks' criterion, $F(4,64) = 13.11$, $p < .0001$.

Since multivariate effects of tensile strength test and nick-break test jury evaluations were significant, these effects were further explored at the univariate level. The multivariate test was followed by the univariate analysis of variance, also reported in Table 1. Utilizing tensile strength test as a dependent measure, there was a significant treatment effect, $F(2,33) = 6.195$, $p < .01$. The tensile strength test means in pounds per square inch for the 15-, 30-, and 45-minute distributed practice interval groups were 39,549.58; 29,927.58; 14,693.83, respectively.

The Student-Newman-Keuls Multiple Comparison Procedure revealed the mean for the 45-minute practice group ($\bar{X} = 14,693.83$) was lower than both the means for the 30-minute practice group ($\bar{X} = 29,927.58$) and the

15-minute practice group ($\bar{X}$ = 39,549.58). Means for the 30- and 15-minute practice groups did not differ significantly. Means and standard deviations are displayed in Table 2.

Table 2

Average Means and Standard Deviations of Tensile Strength and Average Jury Nick-Break Test Scores for Three Distributed Practice Intervals

Distributed Practice Intervals	Tensile Strength		Average Jury Scores	
	Mean	SD	Mean	SD
15 minute	39,549.58	7,072.69	77.25	10.91
30 minute	29,927.58	12,540.84	63.08	13.29
45 minute	14,693.83	26,559.91	33.75	14.99

Utilizing the average jury scores of subject's welds as the dependent variable, a significant treatment effect was noted, F = (2,33) 32.183, $p < .0001$. The Student-Newman-Keuls Multiple Comparison Procedure revealed significant differences among the means for the three groups. The 45-minute practice interval mean ($\bar{X}$ = 37.50) was significantly lower than the 30-minute practice interval mean ($\bar{X}$ = 63.08) and the 15-minute practice interval mean ($\bar{X}$ = 77.25). The 30-minute practice interval mean ($\bar{X}$ = 63.08) was significantly lower than the 15-minute practice interval mean ($\bar{X}$ = 77.25) and significantly higher than the 45-minute practice interval mean ($\bar{X}$ = 37.50).

Results indicate a rejection of the hypothesis. As noted, the main effects of distributed practice time intervals of 15-, 30-, and 45-minutes (independent variables), did significantly influence the quality of the butt welds made by ninth grade vocational agriculture students as measured by the tensile strength test and the nick-break test average jury evaluations (dependent variables).

Conclusions

From the results on the tensile strength and nick-break average jury evaluations test, it may be concluded that with the same total practice time, different distributions of welding practice time intervals influence the quality of butt welds made by ninth grade vocational agriculture students. The results of the mechanical tensile strength test show a definite superiority of the 30- and 15-minute distributed practice time intervals for acquisition and performance of elementary arc welding psychomotor skills.

The results of the subjective jury ratings of welds utilizing the nick-break test form noted a definite superiority of the 15-minute distributed practice time interval over both the 30- and 45-minute intervals. Also, a definite superiority was exhibited by subjects in the 30-minute group over those in the 45-minute distributed practice interval group.

Even though Conley (1938) had demonstrated a high correlation between the tensile test and nick-break test, it appears that the subjective nick-break test was somewhat more discriminating in the evaluation of the welds. This may be of initial importance in the evaluation of elementary psychomotor skill development of basic welding instruction and evaluation. Furthermore, the basic criteria and their components outlined on the nick-break test evaluation form, when compared to a "good" weld sample, can offer immediate positive reinforcement for the learner as suggested by Shinn (1973).

Hovland's (1983) theory of more rapid acquisition of cognitive information by distributed practice appears to offer some explanation for the differentiated welding performance, in the psychomotor domain, in the acquisition and performance of arc welding skills. As he suggested in learning in the cognitive domain, the longer practice session (45-minutes) probably allowed fatigue to set in and mask the extent of learning or performance. Also, probably for the psychomotor domain as well as for the cognitive learning domain, the rest pauses allow for the incorrect associations to weaken more rapidly than the correct associations, because of the differential strength of the incorrect (interfacing associations) and correct associations. Edwards and Scannell's (1969) investigations supporting this position suggested that the intervals associated with distributed practice are helpful because the error tendencies in response acquisition will be great, and the time intervals allow, through other factors, a recovery of error tendencies so that subsequent correct responses extinguish such error.

Also, the 30- and 15-minute distributed practice intervals involved an increased number of periodic recall and performance events after no-practice intervals, a situation Hovland concluded enhanced acquisition and retention. This would aid in explaining the net gain or significant gain in acquisition and performance of welding skills of the groups in the 30- and 15-minute distributed practice intervals.

Implications

Several implications are offered as a result of this study and subsequent discussion. It appears that the theoretical positions supporting distribution of practice concepts associated with acquisition and learning in the cognitive domain extend to the psychomotor domain. Extensive research is needed to ascertain if these basic concepts can be supported in skill development areas other than welding.

It appears that practice intervals of 30- to 15-minutes are most appropriate for ninth grade vocational agriculture students in the development of elementary welding skills if the primary concern is focused on high tensile strength welds. However, if the primary concern is on visual inspection criteria, the 15-minute practice interval seems the most appropriate. Additional research is needed relating the classroom management and organization of learning experiences around the cluster concept.

Other commonly clustered exploratory skill areas need research to determine the most beneficial acquisition and performance intervals for distributed practice. This would allow more justifiable tailoring of daily classroom experiences for these students. Some of these commonly clustered exploratory skill areas might include basic woodworking and construction, basic small engine repair, basic electricity, basic plastics, basic plumbing, and ceramics. Only by research and implementation of the findings can maximum exposure to content and hands-on experiences, use of resources, and benefits from the principles related to acquisition of learning and performance through distributed practice be achieved.

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FOURTH GENERAL SESSION

Robert Terry - Presider
Oklahoma State University

Stanley Burke - Facilitator
Virginia Polytechnic and State University

Ronald Brown - Reactor
Mississippi State University

FOLLOW-UP OF COLLEGE OF AGRICULTURE GRADUATES AT OKLAHOMA STATE UNIVERSITY: 1979-1983

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INTRODUCTION

Recent changes in agricultural technology have brought about a decrease in the number of people employed in production agriculture and an increase in the number of people employed in technical support areas of agriculture, as reported by the U.S. Department of Agriculture.

These changes in the types of employment available in agriculture have brought about, and will bring about, a need for new skills and knowledge by the agricultural worker. The agricultural worker and the agricultural industry look to the college of agriculture of their university to provide the training needed to be productive in today's agriculture. This charge to provide instruction in agriculture must be considered by the land-grant university when planning its instructional program. The land-grant university must be aware of the changing needs of the clientele that it serves if it is to provide proper training for agricultural workers. The university must view itself as a changing social institution in touch with the political, social, and economic structure of soceity if it is to survive as a source of information and training for today's agriculture. The land-grant university with the obligation to provide adequate and up-to-date information and training in agriculture for the state of Oklahoma is Oklahoma State University (OSU).

The College of Agriculture at OSU has 11 departments offering degrees to students who will be employed in a large variety of occupations. Each department in the College of Agriculture offers a wide variety of course offerings and a multiple of specialty options in its degree programs in an attempt to meet the needs of all its students.

Statement of the Problem

Due to the diversity of the College of Agriculture and the changes in the types of agricultural employment, better information is needed as to the areas of employment of College of Agriculture graduates, the skills needed by the graduates in their employment, salaries and benefits received from employment, and changes needed in the instructional program and job placement program to better meet the needs of the graduates.

Purpose of the Study

The purpose of this study was to gather specific information from former students of the College of Agriculture at Oklahoma State University about their current employment status, skills needed in their employment, and the quality and adequacy of training received from their academic preparation while attending Oklahoma State University.

OBJECTIVES OF THE STUDY

In order to accomplish the purpose of this study, the following objectives were formulated:

1. To identify current positions and salary range of College of Agriculture graduates.
2. To determine the degree of relationship of the respondents' Bachelor of Science degree and their area of employment since receiving the degree.
3. To determine the adequacy of training, counseling, and placement services received by College of Agriculture graduates, as perceived by past College of Agriculture graduates.
4. To determine the adequacy of instructional facilities and equipment, as perceived by past College of Agriculture graduates, used in the educational training of College of Agriculture graduates.
5. To determine the degree of influence selected factors and people had on the respondents' decisions to earn a degree in agriculture at OSU.

METHODS AND PROCEDURES

The population for this study consisted of Bachelor of Science degree graduates of the College of Agriculture at OSU for the years of 1979 through 1983. Only graduates who were United States residents were included. It was determined that 1,525 graduates fit the description of the population.

A mailed questionnaire was chosen as the method for collecting data for this study. On July 19, 1984 the first mailing of questionnaires was completed. A cover letter from Dr. Paul Hummer, Dean of Resident Instruction for the College of Agriculture at OSU, was used for the first mailing. Thirty percent of the population responded to the first mailing. A second mailing was made to all nonrespondents on August 21, 1984. The second mailing used a cover letter from the department head of the department in which each graduate received their degree. Three weeks after the second mailing, 62% of the total population had responded.

The analysis of the data obtained from the questionnaire involved several statistical procedures, including the tabulation of frequencies, percentages and means. The data were analized for the College of Agriculture total and for each department separately.

FINDINGS

Employment Status of Respondents

Fifty percent or more of the respondents from each of the degree major areas (except Biochemistry and Plant Pathology) indicated that the first full-time job after their B.S. degree was in their field of college study or closely related to their field of college study. A small change to jobs less related to their field of college study was indicated by most degree major respondent groups when evaluating their present employment, as can be seen in Table I.

Effectiveness and Quality of Instruction, Equipment, and Facilities

The respondents from all degree major areas (except Entomology and Plant Pathology) rated the quality of instructors in their major field of study as "good". Entomology and Plant Pathology were rated in the "average" category by the respondents, as shown in Table II.

The quality of course content (usefulness and quality of information) of courses in the respondent's major field of study was rated "average" by respondents from the degree major areas of Agricultural Communications, Agricultural Engineering, Entomology, and Plant Pathology. All other degree major respondent groups rated the quality of course content in their major area of study in the "good" category.

The quality of equipment and facilities used in instruction in the respondent's major field of study was rated as "average" by Biochemistry, Forestry, Landscape Architecture, and Plant Pathology degree major groups. All other degree major respondent groups had a mean in the "good" category for this question.

The effectiveness of their total B.S. degree program was rated as "average" as preparation for their first position after receiving the degree by the degree major respondent groups of Agricultural Communications, Agricultural Engineering, Agronomy, and Entomology. All other respondent groups rated their B.S. degree program as "good" in this regard, as can be seen in Table II.

Table II also shows that about one-half of the degree major respondent groups indicated that training received in their B.S. degree had been of "moderate benefit" to them in their career. The other one-half indicated "much benefit" in this area.

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TABLE 1

SUMMARY OF RELATIONSHIP OF DEGREE AREA TO FIRST AND PRESENT EMPLOYMENT

Degree Major	Employment was in Field of College Study First %	Employment was in Field of College Study Present %	Employment was Closely Related to Field of College Study First %	Employment was Closely Related to Field of College Study Present %	Employment was Somewhat Related to Field of College Study First %	Employment was Somewhat Related to Field of College Study Present %	Employment had Little Relationship to Field of College Study First %	Employment had Little Relationship to Field of College Study Present %	Employment had No Relationship to Field of College Study First %	Employment had No Relationship to Field of College Study Present %
Agricultural Communications	28.57	7.14	21.42	7.14	7.14	14.29	14.29	21.43	28.57	50.00
Agricultural Economics	30.58	26.92	26.70	24.52	25.24	22.60	6.31	14.42	11.17	11.54
Agricultural Education	63.72	56.14	12.39	14.03	10.62	15.79	7.08	9.65	6.19	4.39
Agricultural Engineering	42.86	25.00	25.00	25.00	25.00	25.00	7.14	17.86	0.00	7.14
Agriculture (General)	45.83	45.83	25.00	16.67	8.33	16.67	8.33	8.33	12.50	12.50
Agronomy	53.41	55.06	22.73	20.22	9.09	10.11	5.68	7.87	9.09	6.74
Animal Science	42.59	40.62	22.22	23.21	12.96	14.29	8.80	8.04	13.43	13.84
Biochemistry	22.22	42.86	22.22	28.57	22.22	14.29	22.22	0.00	11.12	14.29
Entomology	66.66	0.00	16.67	0.00	16.67	57.14	0.00	42.86	0.00	0.00
Forestry	41.67	28.81	8.33	15.25	8.33	11.86	15.00	13.56	26.67	30.51
Horticulture	60.66	51.67	26.23	11.67	3.28	5.00	3.28	8.33	6.55	23.33
Landscape Architecture	73.68	76.32	18.42	5.26	5.26	5.26	0.00	5.26	2.63	7.89
Mechanized Agriculture	33.33	33.33	16.67	22.22	27.78	22.22	16.67	0.00	5.55	22.22
Plant Pathology	33.33	0.00	0.00	0.00	33.33	75.00	0.00	0.00	33.34	25.00
Pre-veterinary Medicine	70.59	88.23	23.53	11.77	5.88	0.00	0.00	0.00	0.00	0.00
Total	46.23	42.15	21.17	19.43	14.30	15.37	7.43	9.99	10.87	13.06

TABLE II

SUMMARY OF PERCEPTIONS OF INSTRUCTIONAL PROGRAM QUALITY AND EFFECTIVENESS

Degree Major	Instructors		Course Content		Equipment and Facilities		Preparation for First Position		Benefit in Career	
	Mean	Category	Mean	Category	Mean	Category	Mean	Category	Mean	Category
Agricultural Communications	3.50	Good	3.21	Average	4.00	Good	3.07	Average	3.07	Mod. benefit
Agricultural Economics	4.21	Good	3.98	Good	3.98	Good	3.73	Good	3.50	Much benefit
Agricultural Education	3.92	Good	3.66	Good	4.11	Good	3.69	Good	3.67	Much benefit
Agricultural Engineering	3.76	Good	3.38	Average	3.86	Good	3.48	Average	3.34	Mod. benefit
Agriculture (General)	4.00	Good	3.75	Good	3.83	Good	3.61	Good	3.25	Mod. benefit
Agronomy	3.74	Good	3.64	Good	3.53	Good	3.36	Average	3.50	Much benefit
Animal Science	4.10	Good	3.93	Good	3.84	Good	3.57	Good	3.47	Mod. benefit
Biochemistry	4.00	Good	4.11	Good	3.22	Average	3.78	Good	4.00	Much benefit
Entomology	3.43	Average	3.29	Average	3.57	Good	3.29	Average	3.43	Mod. benefit
Forestry	3.76	Good	3.85	Good	[illegible]	Average	3.54	Good	3.38	Mod. benefit
Horticulture	4.24	Good	3.97	Good	3.97	Good	3.60	Good	3.57	Much benefit
Landscape Architecture	4.13	Good	3.89	Good	3.10	Average	3.71	Good	3.89	Much benefit
Mechanized Agriculture	4.44	Good	4.00	Good	4.22	Good	3.72	Good	3.56	Much benefit
Plant Pathology	3.00	Average	2.50	Average	3.25	Average	2.75	Average	3.00	Mod. benefit
Pre-veterinary Medicine	3.82	Good	3.82	Good	3.88	Good	3.81	Good	3.50	Much benefit
Total	4.02	Good	3.83	Good	3.83	Good	3.60	Good	3.51	Much benefit

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The respondents from most degree major groups indicated that if they could remake their decision regarding study in the College of Agriculture at OSU they would seek the same degree or would seek a degree in a different area of agriculture at OSU. However, 50% of the respondents from the degree major area of Plant Pathology indicated that they would seek a degree in an area outside of agriculture.

Effectiveness and Quality of Job Placement and Guidance Programs

Several of the degree amjor respondent groups indicated that job placement help given to them by their major department was "inadequate", while most departments and the College of Agriculture total was rated "adequate" in this area.

Most respondents were aware of some or all of the services provided by the College of Agriculture Job Placement Office at OSU. A rating of "adequate" was given by the respondents to the assistance they received from the College of Agriculture Job Placement Office. The respondents also rated the quality of facilities used in job placement by the College of Agriculture Placement Office as "average".

The total mean response of 3.30 for rating of the quality of career guidance and advisement received by respondents in their major department was in the "adequate" category. All groups except Plant Pathology (2.00), which was in the "inadequate" category, were in the "adequate" or "more than adequate" category.

All degree major respondent groups except Agricultural Education, Agriculture (General), and Pre-Veterinary Medicine indicated that a summer inter program (work experience) would have been of "much benefit" to them in making a career choice. Those degree major respondent groups not in the "much benefit" category were in the "moderate benefit" category.

Factors That Influenced Respondent's Decision to Pursue a Degree in Agriculture at OSU

The "Overall prestige of OSU" and "OSU's agricultural facilities" each had a "strong" degree of influence on the respondents' decision to earn a degree in agriculture at OSU. "Reputation of OSU faculty in their field" and "Nearness to home" had a "moderate" degree of influence on the respondents' decisions to earn a degree in agriculture at OSU, while "Financial assistance" and "Uncertainty about vocational goals" had "little" influence on this decision. Inability to find a job had no influence on the total respondents' decisions to seek a degree in agriculture at OSU.

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2. The perceived quality of instruction in all degree major areas (except Entomology and Plant Pathology), was rated as good. Entomology and Plant Pathology degree major areas had an average perceived quality, which indicated that methods of instruction were adequate, but some improvement in instructional quality could be made.

3. Since most degree majors perceived course content quality as good, it would seem that course content quality for the College of Agriculture was adequate; however, Agricultural Communications, Agricultural Engineering, and Plant Pathology degree majors perceived course content as only average, indicating that improvement might be made in these areas. Plant Pathology degree majors perceived course content as average quality. All other degree majors perceived course content as good quality.

4. Most degree major areas had equipment and facilities used in the training of undergraduate students that was perceived to be of good quality, indicating that present equipment and facilities were adequate in quality. However, the degree major areas of Biochemistry, Forestry, Landscape Architecture, and Plant Pathology had equipment and facilities that were perceived to be of only average quality, indicating that improvement might be made in these areas.

5. A majority of the degree major areas perceived the training received in their degree program as good in effectiveness as preparation for their first employment after receiving the degree. However, Agricultural Communications, Agricultural Engineering, Agronomy, Entomology, and Plant Pathology degree majors perceived the quality to be only average in this regard, indicating that improvement might be made in these areas.

6. If graduates from the College of Agriculture at OSU could remake their decision regarding study in the College of Agriculture, one-half said they would seek the same degree at OSU again, indicating that most graduates were satisfied with their decision of a major in agriculture at OSU.

7. Most major department in the College of Agriculture at OSU were perceived to do an average quality job in helping students with job placement, which indicates that the departments are adequate in this regard, with some possible improvement warranted.

8. Over 90% of the graduates of the College of Agriculture were aware of the College of Agriculture Job Placement Office at OSU and rated it as doing an adequate job, thus indicating that the office was being operated and managed properly, but could possibly have some improvements made in its operations and management. Forty percent of the graduates did not seek help from the office, indicating a need for improvement in increasing the number of students which would seek assistance.

9. The College of Agriculture job placement facilities were perceived to be of only average quality, indicating that the facilities are adequate, but some improvement might be needed.

"Spouse", "High School Counselor", and "4-H or county extension agent" had "no" influence on the total respondents' decisions to earn a degree in agriculture at OSU. "High School Vo-Ag teacher", "Employer", and "Friend" had "little" influence on the respondents' decisions to earn a degree in agriculture at OSU. However, the "High School Vo-Ag teacher" had a "strong" degree of influence on Agricultural Education degree major respondents' decisions to earn a degree in agriculture at OSU, while "no" influence was shown by some degree major area respondents. Parents had a "moderate" degree of influence on the respondents' decisions to earn a degree in agriculture at OSU.

Curriculum Changes Needed as Perceived by Respondents

Over 50% of the respondents from Agricultural Communications and Mechanized Agriculture would seek a degree with more specialization in their major field of study if they could reconsider their decision regarding study in the College of Agriculture. Of the Agricultural Engineering degree major respondents, 48% would seek a degree with more specialization.

Most degree major respondent groups had the highest percentage who indicated that they would seek a degree with basically the same amount of specialization if they could reconsider their decision regarding study in the College of Agriculture at OSU. Computer courses were most often listed as courses needed in B.S. degree programs by respondents.

Salary History of Respondents

The salary range for all degree major respondent areas for their first position after receiving their B.S. degrees was varied, with the majority of the total respondents being in the "$10,000-$14,999" and "$15,000-$19,999" categories.

Present salary ranges for respondents was more varied for present employment than for the respondent's first job after receiving their B.S. degrees. The majority of the respondents' present salaries was in the $15,000-$19,999" and "$20,000-$24,999" categories.

CONCLUSIONS

Through a careful analysis of the data and findings, the following conclusions were made:

1. Since it was indicated that most graduates find employment that is closely realted to their field of college study, this would seem to indicate that the graduates were trained in areas for which employment was available and that the training received by the graduates was adequate to secure employment in their chosen area of agriculture.

RECOMMENDATIONS

1. Since the quality of instruction for the degree major areas of Entomology and Plant Pathology was only rated average, an effort should be made to continue to improve the quality of instruction in the College of Agriculture. All other degree major areas had quality of instruction that was rated as good, indicating a program of visitation by Entomology and Plant Pathology instructors with instructors from other departments to exchange ideas and methods to improve instruction might be useful.

2. Since course content for the degree major areas of Agricultural Communications, Agricultural Engineering, and Plant Pathology was rated as only average, an effort should be made to continue to improve the usefulness and quality of course content in these degree areas, as well as all other degree programs in the College of Agriculture.

3. Since the equipment and facilities in the training of undergraduate students in the degree major areas of Biochemistry, Forestry, Landscape Architecture, and Plant Pathology was rated only average in quality, efforts should be made to improve the equipment and facilities in these departments, along with the continued improvement and updating of such equipment in all other departments.

4. Since the training received by the degree majors of Agricultural Communications, Agricultural Engineering, Agronomy, Entomology, and Plant Pathology was rated only average in effectiveness as preparation for their first employment after graduation, these programs should be reviewed to determine if changes could improve their preparation for first employment. However, it is recognized that a portion of the lack of effectiveness as preparation for employment may be due to the lack of the graduate finding employment related to their degree area.

5. Although job placement may not be recognized as a major responsibility of the departments in the College of Agriculture, most were rated as doing an adequate job in this respect. Since the departments in the College of Agriculture are a valuable source of employer contact for graduates, it is recommended that these efforts be continued with possible increased emphasis.

6. The College of Agriculture Job Placement Office was rated adequate in its performance, and 60% of the graduates utilized its services, indicating a strong placement service. However, 40% of the graduates did not seek help from the office, indicating that efforts could be made by the office to aid more of the graduates in securing employment.

7. Based on the data indicating that the College of Agriculture job placement facilities are of only average quality, steps should be taken to improve the quality of the facilities.

8. Since the career guidance and advisement received by students of the degree majors of Agricultural Economics, Biochemistry, Horticulture, and Pre-Veterinary Medicine was

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10. Since career guidance and advisement received by students of the degree majors of Agricultural Economics, Biochemistry, Horticulture, and Pre-Veterinary Medicine are perceived to be of more than adequate quality and all other degree major areas were perceived to be adequate in this regard, only small amounts of improvement might be needed in career guidance and advisement programs.

11. A summer intern program (work experience) was indicated as a need in the College of Agriculture, as it was perceived to be of much benefit in making a career choice by all degree majors except Agricultural Education, Agricultural (General), and Pre-Veterinary Medicine, for which it was perceived to be of moderate benefit.

12. The overall prestige of OSU in general and OSU's agricultural facilities were indicated to be useful in recruiting students, as they were perceived to have a strong influence on students' decisions to earn degrees in agriculture at OSU. The reputation of the OSU faculty and OSU's nearness to students' homes were perceived to have a moderate degree of influence, and financial assistance and uncertainity about vocational goals were perceived to have little influence.

13. It was indicated that contact with the parents of prospective students would be effective as a means of recruiting students into the College of Agriculture, as parents were rated the most influential of the persons studied on the students' decisions to seek a degree in agriculture at OSU. High school vo-ag teachers, employers, and friends were perceived to have less influence, and spouses, high school counselors, and 4-H county extension agents were perceived to have no influence.

14. Since high school vo-ag teachers were perceived to have a strong degree of influence on Agricultural Education majors' decisions to seek a degree in agriculture, it would indicate that contact with the high school vo-ag teacher should be useful in recruiting Agricultural Education students.

15. Degree majors of Agricultural Communications, Agricultural Engineering, and Mechanized Agriculture perceived the need for more specialization in their major field of study, thus indicating a need for possible changes in these degree programs.

16. More computer courses were perceived to be needed in the curriculum of most degree majors in agriculture at OSU, indicating a need for possible degree program course changes.

17. Since the salary range for most graduates was between $10,000 and $19,999 for their first employment after graduation and between $15,000 and $24,999 for their present employment, it is indicated that salary range information would be useful in recruitment and advisement of students.

rated as more than adequate in quality, a program might be implemented so that these departments could assist the other departments in the improvement of their career guidance and advisement programs. All degree major areas not listed had career guidance and advisement received by students that was adequate in quality.

9. An increase in summer intern programs should be implemented into the degree programs of the College of Agriculture, since it was indicated to be of much benefit in making a career choice by all degree major groups except Agricultural Education, Agriculture (General), and Pre-Veterinary Medicien.

10. Efforts should be increased for making the general public and prospective students aware of the prestige of OSU and OSU's agricultural facilities, as they have a strong degree of influence on student decisions to earn a degree in agriculture at OSU.

11. Efforts should be made to inform the parents of prospective students of the quality of programs in the College of Agriculture and employment opportunities in agriculture. Parents have the highest level of influence of the persons studied on the students' decisions to seek a degree in agriculture at OSU.

12. Since high school vo-ag teachers have a strong degree of influence on Agricultural Education majors' decision to seek a degree in agriculture at OSU, the Agricultural Education Department should seek to keep close contact with vo-ag teachers for the purpose of recruiting students.

13. Since the graduates in the degree major areas of Agricultural Communications, Agricultural Engineering, and Mechanized Agriculture indicated a need for more specialization in their major field of study, efforts should be taken to further evaluate these degree programs and to determine what changes might be needed so that they might better serve the needs of students.

14. Based on the indication that more computer courses are needed in the curriculum of degree programs in the College of Agriculture at OSU, further efforts should be made to evaluate the needs for computer courses and incorporate these needs into the degree programs. It is recognized that much has already been done to increase the level of computer training for students in the College of Agriculture since the graduation of the population for this study.

15. The salary range information obtained in this study should be used in student recruitment and advisement, since the salary ranges for most graduates were in the $10,000-$19,999 range for their first employment after graduation and in the $15,000-$24,999 range for their present employment.

16. Since some changes in the College of Agriculture instructional program were suggested by the data from this study, it is recommended that more research be conducted to

specifically determine how improvements can be made in each degree major area regarding instruction, course content, equipment and facilities, job placement, career guidance, and student recruitment in order to continue to maintain their high quality and to aid continued improvement.

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IDENTIFYING THE MOST IMPORTANT PEOPLE IN THE HISTORY OF AGRICULTURAL EDUCATION IN AMERICA

The Southern Agricultural Education
Research Conference
Mobile Alabama
March, 1985

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IDENTIFYING THE MOST IMPORTANT PEOPLE IN THE HISTORY OF AGRICULTURAL EDUCATION IN AMERICA

INTRODUCTION

Over the years, a number of historical examinations of the background and development of agricultural education in this country have appeared. Stimson and Lathrop (1942) examined the movement of the profession largely as it developed following The Smith-Hughes Act of 1917. In a later study, Ekstrom (1969) looked at the major events and leaders preceding 1917. In addition, any number of state level histories of agricultural education have been compiled.

OBJECTIVE

Two things emerge as the central foci in all such historical works: people who have made a difference and events that signal major accomplishments or turning points in the profession's development. Those earlier studies did not single out individuals or events that have had the most impact on the profession. Rather, they were designed to chronicle in a nonjudgemental way all of the important contributors and contributions over the years. The objective of this study was to answer the following research question:

What members of the profession have contributed the most to the historical development of agricultural education?

METHODS

The decision was made to secure knowledgable respondents for the survey rather than random representatives from the profession. Agricultural education professionals consist largely of three groups: teachers, teacher educators, and supervisory personnel both at the state level and in Washington D.C.. A list of ten of the most influential and well known members of each of those groups was identified to give equal representation to each component. In addition, a list of ten very prominent retirees, chosen to include representatives of all three categories, was compiled. Thus a total of 40 active and retired members of the profession were selected for the panel. A conscious effort was made to insure representation from all parts of the country in each of the four groups.

Each member of the panel was mailed a survey form which requested that the respondent submit a list of the most important individuals in the history of agricultural education. Names of respondents were included on the surveys because anonymity was not judged to be important. A cover letter was included to explain the purpose of the study and the process by which the panel had been selected. After appropriate followup, a total of 33 (83%) members of the panel had responded.

Tabulation of the first round of the survey produced a list of 175 individuals, each of whom had been nominated by one or more respondents. The criterion for inclusion in the second round was three or more nominations. This produced the second round survey consisting of 28 individuals in alphabetical order with no explanation as to their contributions. It was felt that the names should stand alone and that descriptions could bias the results.

The respondents were asked to rate each nominee on a scale as follows:

1. contribution NOT major (or not familiar to me)
2. minor contribution compared to others on list
3. moderate contribution compared to others on list
4. contribution important but not among greatest
5. ranks among greatest in our profession's history.

A cover letter was included to explain the selection criteria for inclusion of individuals on the second round survey. After about a month, a total of 36 surveys had been returned for a response rate of 90%.

RESULTS

Of the twenty-eight persons listed on the second round survey 18 were teacher educators, 9 were supervisory or support personnel at either state or federal level, and 1 was a local teacher. The decision was made not to reveal the specific rankings, thus the ten who were rated highest are listed here in alphabetical order, not in rank order. It is interesting that all of the living teacher educators among this group are recipients of the Distinguished Service Award of the American Association of Teacher Educators in Agriculture.

Ralph Bender. Dr. Bender's contributions to agricultural education can be traced to several areas. First, he was known as a master teacher. Second, he was Chairman of the Department of Agricultural Education at

The Ohio State University, Vice President of The American Vocational Association (AVA), and both Secretary and President of the Agricultural Education Division of AVA. And third, his scholarly activities of advising numerous doctoral students and co-authoring in publications of Teacher Education in Agriculture, 1972 AVA Yearbook, The FFA and You and Adult Education in Agriculture have all made a positive impact in agricultural education.

Clarence Bundy. Dr. Bundy has had an impact upon agricultural education through his many books published in technical agriculture. These books can be found in almost every local department of agricultural education across the country. His writings have influenced a positive growth in students as they learned more about technical agriculture. He also served as the Chairman of the Agricultural Education Department at Iowa State and was one of the strong proponents of supervised occupational experience programs.

Harold Crawford. Dr. Crawford has served as Chairman of Agricultural Education at Iowa State University and he is noted for giving leadership to the profession through special projects and seminars. The most notable contribution was when he served as project director to the national standards project which led to the establishment of quality standards for the total program of agricultural education. Many states followed up the national project with the development of quality standards for implementation at the state level. These standards still serve as a benchmark for programs at both high school and university levels today.

Henry Groseclose. Professor Groseclose's contribution to the profession has centered around the FFA. Groseclose, along with Harry Sanders, Walter Newman, and Edwin McGill founded the Future Farmers of Virginia in 1925 at Virginia Polytechnic Institute while they were on the faculty in agricultural education. His early work served as a basis for the constitution and by-laws adopted by the FFA at their first national convention in 1928. He served as the first secretary and treasurer of the National FFA and to this day is given much credit for the development of the FFA as an integral part of the total program of agricultural education.

Carsie Hammonds. Professor and Head of Agricultural Education at the University of Kentucky, Dr. Hammonds was a scholar who led the profession nationally through his emphasis in teacher preparation. His book on Teaching Agriculture, although out of print, still serves as a basis for learning theory as applied to vocational agriculture teaching. His deep belief in problem solving and a humanistic philosophy in agricultural education made him a popular speaker at state, regional, and national levels.

H. M. Hamlin. Perhaps one of the professions' earliest and most prolific writers was Dr. Hamlin. He has authored or co-authored 42 books and more than 175 articles for professional journals. His most widely read book, Agricultural Education In Community Schools had great impact upon making local vocational agricultural programs truly community based and promoting the use of advisory councils. He served as Head of Agricultural Education at the University of Illinois and his lasting contribution to the profession might be his initial efforts in co-founding the Agricultural Education Magazine and serving as editor of the first volume.

H. N. Hunsicker. Mr. Hunsicker has been a most influential person by helping to guide the profession from a strictly farming based educational program to an agribusiness focus. Starting as a member of the Future Farmers of Virginia, he later served as a state supervisor and as National FFA Advisor. During his term as Education Program Specialist, Agribusiness and National Resources Occupations in the United States Office of Education (USOE), a number of most notable events occurred, including development of an expanded definition of vocational agriculture, emphasis upon post-secondary schools, guidelines for young farmer programs, formation of National FFA Alumni, admission of girls into the FFA, and merging the New Farmers of America with the FFA.

Lloyd Phipps. Dr. Phipps' contribution to the profession came while he was Chairman of the Agricultural Education Department at the University of Illinois. He was a prolific writer and believed in quality programs. His most noteworthy publication, still being used today as the framework for many local programs of vocational agriculture, is The Handbook on Agricultural Education for Public Schools. Other writings centered around advisory councils, adult education, and agricultural mechanics.

W. A. Spanton. Dr. Spanton's career spanned teaching in high schools, serving as superintendent of schools and serving as state supervisor of agriculture before becoming Chief of the Agricultural Education Service and National FFA Advisor in 1941. His initial contribution was helping to form the national judging contests in Kansas City in 1926 and 1927. This commitment to the program led to his assignment of compiling a

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temporary constitution for the National FFA which was later adopted at the first National Convention in 1928.

A. W. Tenney. The period of 1943-57 was one of growth and change for the profession and A. W. Tenney, serving as Program Specialist in agricultural education in the USOE, was in the forefront. His leadership gave birth to the Future Farmer Supply Service, National FFA Band and Chorus, FFA Goodwill Tour, National FFA Foundation, and the *National Future Farmer Magazine*. He also wrote several publications on the FFA and teaching methodology.

EDUCATIONAL IMPORTANCE OF THE STUDY

Agricultural Education has a long and distinguished history for which there is no shortage of documentation. However, this study examines the history of our profession from an innovative perspective. For the first time, it provides for the identification of those individuals whose contributions have been of the greatest magnitude in shaping agricultural education. It provides information to the profession which has never been available before and contributes to the literature in a meaningful way.

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IDENTIFYING THE MOST IMPORTANT EVENTS IN THE HISTORY OF AGRICULTURAL EDUCATION IN AMERICA

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IDENTIFYING THE MOST IMPORTANT EVENTS IN THE HISTORY OF AGRICULTURAL EDUCATION IN AMERICA

INTRODUCTION

Over the years, a number of historical examinations of the background and development of agricultural education in this country have appeared. Stimson and Lathrop (1942) examined the movement of the profession largely as it developed following The Smith-Hughes Act of 1917. In a later study, Ekstrom (1969) looked at the major events and leaders preceding 1917. In addition, any number of state level histories of agricultural education have been compiled.

OBJECTIVE

Two things emerge as the central foci in all such historical works: people who have made a difference and events that signal major accomplishments or turning points in the profession's development. It was not the purpose of those studies to single out individuals or events that have had the most impact on the profession. Rather, they were designed to chronicle in a nonjudgemental way all of the important contributors and contributions over the years. It would seem that specific events could be cited as the most important to agricultural education. Yet, apparently no effort has been made toward that end. It was the objective of this study to answer the following research question:

What major events in the history of agricultural education and vocational agriculture have been most important in shaping the profession as it exists today?

METHODS

The decision was made to secure knowledgable respondents for the survey rather than random representatives from the profession. Agricultural education professionals consist largely of three groups: teachers, teacher educators, and supervisory personnel both at the state level and in Washington D.C.. A list of ten of the most influential and well known members of each of those groups was identified to give equal representation to each component. In addition, a list of ten very prominent retirees, chosen to include representatives of all three categories, was compiled. Thus a total of 40 active and retired members of the profession were selected for the panel. A conscious effort was made to insure representation from all parts of the country in each of the four groups.

Each member of the panel was mailed a survey form which asked the respondent to identify the most important events in the history of the profession. Names of recipients were included on the surveys because anonymity was not judged to be important. A cover letter was included to explain the purpose of the study and the process by which the panel had been selected. About two weeks later, a follow-up letter was sent to nonrespondents along with a second copy of the survey form. After almost two months, a total of 33 (83%) members of the panel had responded.

Tabulation of the first round of the survey produced 47 events, each of which had been nominated by one or more respondents. The second round survey was developed from this list of nominated events. The criterion for inclusion in the second round was two or more nominations for the event. This produced a list of 35 events, with no explanations but grouped into logical categories as follows: establishment of organizations or agencies, legislation, establishment of journals, and other events.

The respondents were asked to rate each event on a scale as follows:

1. contribution NOT major (or not familiar to me)
2. minor contribution compared to others on list
3. moderate contribution compared to others on list
4. contribution important but not among greatest
5. ranks among greatest in our profession's history.

A cover letter was included to explain the selection criteria for inclusion of events on the second round survey. After about a month, a total of 36 surveys had been returned for a response rate of 90%.

RESULTS

Many important events have combined to shape the profession of agricultural education as it exists today. Nevertheless, some of those must have had greater impact than others. There was a tie for tenth place, and what follows is the list of eleven events judged by the panel of prominent agricultural educators to be the most important in the profession's history. They are listed in rank order beginning with the most important.

Smith-Hughes. The Smith-Hughes Act of 1917 was the only event rated a perfect 5.0 by all respondents. Generally recognized as the cornerstone of all of vocational education, including agricultural education, it laid out the organizational structure for the profession which still exists today. (Barlow, 1967). It called for implementation of farm practice programs, specified the purposes of agricultural education, and provided federal monies to initiate the program on a nationwide scale.

FFA. The establishment of the Future Farmers of America ranked second. One of the four main components of vocational agriculture according to Phipps (1980), the FFA may well be our most effective motivator of students. It is worth noting that Professor Henry Groseclose, who is remembered primarily for his work in FFA, appears in the ten individuals cited in a companion paper, undoubtedly for that reason.

Expanded Definition. The original shape and purpose of agricultural education were given by The Smith-Hughes Act. By the early 1960's it was apparent that training of farmers was no longer adequate as the sole purpose for agricultural education. A widespread movement began to expand the definition af the profession to include training for occupations other than that of farmer. This became legalized in the Vocational Education Act of 1963, which will also appear later in this list.

Twelve Month Contracts. The development of twelve month contracts allowed vocational agriculture teachers to provide supervision of farm project programs during the summer months. This valuable tool also provided time for summer inservice workshops and other teacher conferences. Much that is of value in agricultural education can be attributed to some degree to the year-round approach to the program.

NVATA. The organization of the National Vocational Agriculture Teachers Association in 1948 was surely a milestone in the profession. The organization has proven to be an effective mechanism in promoting professionalism among teachers. In addition, it has proven a valuable tool in helping to shape legislation affecting the profession.

FFA Foundation. The establishment of the National FFA Foundation, Inc. in 1944 provided a support mechanism for vocational agriculture programs through the FFA. It involved the agribusiness community in a substantive way in the promotion of vocational agriculture activities.

Admission of Girls. Female students were systemmatically excluded from participation in vocational agriculture by the Smith-Hughes Act. In large measure that remained true into the 1960's. It was not until 1969 that the last technical barrier to girls in the program was removed with the official admission of girls into the FFA.

Morrill Act of 1862. The Land Grant Act (Morrill Act of 1862), although preceding the formal establishment of vocational agriculture as a program, must nevertheless be considered a cornerstone of the profession. It was through this landmark legislation that the national system of land grant schools came into being. It was also this law that gave impetus to the development of agricultural education in its broader sense.

Public Law 740. The granting of a federal charter (PL 740) in 1950 gave special status to the FFA organization. It also made legal the long standing concept of that organization as an integral part of the curriculum of agricultural education.

Public Law 88-210. The Vocational Education Act of 1963 (PL 88-210) officially expanded the role of vocational agriculture and made inevitable its movement into diverse occupational areas, a situation discussed earlier. But in addition, it greatly expanded the federal role in agricultural education. Many view this landmark legislation as extremely detrimental to agricultural education because it removed the earlier service area identification that had been in effect since Smith-Hughes. This act and its subsequent amendments brought into question the very structure of the program as it had been previously known.

SOEP. During the early years of the existence of agricultural education, the use of a supervised farm project program was mandated by federal legislation. Over the years, and during the 1960's in particular, this limited definition of occupational experience was expanded to include all of those things now referred to as the Supervised Occupational Experience Program (SOEP). The expansion from the farm project approach to the broader SOEP was selected as one of the major events in the profession's history.

EDUCATIONAL IMPORTANCE OF THE STUDY

The development of professionals in any field requires that they be well versed in the profession's history. There is no shortage of historical information available for agricultural education. This study isolates the major events in the historical development of the profession and then rank orders them based on the perceptions of agricultural educators who had been judged to be both knowledgable and prominent. It provides information to the profession which has never been available before and looks at our profession's history from an innovative viewpoint.

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PROSSER, SNEDDEN, AND CONFLICTS WITH AGRICULTURAL EDUCATION: AN HISTORICAL PERSPECTIVE

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Presented at:
Southern Agricultural Education Research Conference
Mobile, Alabama
March, 1985

PROSSER, SNEDDEN, AND CONFLICTS WITH AGRICULTURAL EDUCATION: AN HISTORICAL PERSPECTIVE

INTRODUCTION

Much of agricultural education's current structure and substance can be traced back to the thinking and leadership of David Snedden and Charles Prosser during the first half of this century (Camp, 1983; Venn, 1964; Wirth, 1972). Prosser's Sixteen Theorems of vocational education have formed the cornerstone of vocational education since they were first developed (Camp, 1983; Prosser & Allen, 1925; Wirth, 1972).

At the same time, there were those who opposed Prosser and Snedden's vision for the profession. Their most notable opponent was clearly John Dewey, to whom many vocational educators incorrectly attribute much of the current form and philosophy of the profession. Dewey questioned many of Prosser's most sacred beliefs even before the Smith-Hughes Act codified the Snedden/Prosser philosophy.

In the nearly seven decades since the foundation of vocational education, including agricultural education, was laid in the form of the Smith-Hughes Act, America and the world have changed. We have moved from the age of industry into what Toffler (1980) calls the Third Wave--the post-technological era of information and service. The question must now be raised as to whether vocational education as envisioned by Snedden and Prosser and as described in Prosser's Sixteen Theorems indeed remains the appropriate vehicle for meeting the needs of American education now and in the future.

OBJECTIVES OF THE STUDY

The major objective of the study was to examine the compatibility of the philosophy of vocational education expressed by Sidney Prosser and David Snedden with the philosophy of agricultural education as it has been implemented.

The following specific objectives for the study were accomplished:

1. An examination of the Prosser-Snedden philosophy of vocational education as expressed by the "16 Theorems."

2. An examination of the philosophy of agricultural education as expressed by points of action and implementation.

3. A comparison of the Prosser-Snedden philosophy to the agricultural education philosophy.

METHODS/SOURCES OF DATA

Using an historical methodology, the researchers examined both primary and secondary sources of information concerning the Prosser-Snedden Philosophy. Primary sources included journal articles, books published, and other publications written by both Prosser and Snedden. Secondary sources included journal articles written contemporary to the primary sources.

PROSSER'S SIXTEEN THEOREMS

1. Vocational education will be efficient in proportion as the environment in which the learner is trained is a replica of the environment in which he must subsequently work.

2. Effective vocational training can only be given where the training jobs are carried on in the same way with the same operations, the same tools and the same machines as in the occupation itself.

3. Vocational education will be effective in proportion as it trains the individual directly and specifically in the thinking habits and the manipulative habits required in the occupation itself.

4. Vocational education will be effective in proportion as it enables each individual to capitalize his interests, aptitudes and intrinsic intelligence to the highest degree.

5. Effective vocational education for any profession, trade, occupation or job can only be given to the selected group of individuals who need it, want it and are able to profit by it.

6. Vocational training will be effective in proportion as the specific training experiences for forming right habits of doing and thinking are repeated to the point that these habits become fixed to the degree necessary for gainful employment.

7. Vocational education will be effective in proportion as the instructor has had successful experiences in the application of skills and knowledge to the operations and processes he undertakes to teach.

8. For every occupation there is a minimum of productive ability which an individual must possess in order to secure

or retain employment in that occupation.

9. Vocational education must recognize conditions as they are and must train individuals to meet the demands of the "market" even though it may be true that more efficient ways for conducting the occupation may be known and better working conditions are highly desirable.

10. The effective establishment of process habits in any learner will be secured in proportion as the training is given on actual jobs and not on exercises or pseudo jobs.

11. The only reliable source of content for specific training in an occupation is in the experiences of masters of that occupation.

12. For every occupation there is a body of content which is peculiar to that occupation and which practically has no functioning value in any other occupation.

13. Vocational education will render efficient social service in proportion as it meets the specific training needs of any group at the time that they need it and in such a way that they can most effectively profit by the instruction.

14. Vocational education will be socially efficient in proportion as in its methods of instruction and its personal relations with learners it takes into consideration the particular characteristics of any particular group which it serves.

15. The administration of vocational education will be efficient in proportion as it is elastic and fluid rather than rigid and standardized.

16. While every reasonable effort should be made to reduce per capita cost, there is a minimum level below which effective vocational education cannot be given, and if the course does not permit this minimum of per capita cost, vocational education should not be attempted. (Prosser & Allen, 1925).

FINDINGS (POINTS OF CONTENTION)

Training for the Status Quo

Dewey (1915) first voiced his concern about training for the status quo during the formative years of vocational and agricultural education. He questioned the efficacy of training workers to perform in work settings as they then existed. His contention was that public education, through vocational education, including agricultural education, should undertake the responsibility of leading the way toward industrial reform by training prospective workers in the way things could or should be done, in the conditions that should prevail in the workplace. He expressed his feeling thusly:

> The kind of vocational education in which I am interested is not one which will "adapt" workers to the existing industrial regime; I am not sufficiently in love with the regime for that. It seems to me that the business of all who would not be educational time-servers is to resist every move in this direction, and to strive for a kind of vocational education which will first alter the existing industrial system, and ultimately transform it. (Dewey, 1915, p. 42).

Today, change is the norm and the pace at which that change occurs is accelerating at an accelerating rate. The young person entering an agricultural job today can be almost certain that he or she will not retire from that same job. It is perhaps questionable as to whether the job itself will even exist when he or she reaches retirement age.

Moreover, the conditions needed to further the good of society have changed. In 1915, American agriculture needed workers who would conform to the hard work required of the farmer. Today automation and computerization are rapidly removing many of the least desirable tasks from the farm situation. What is needed now more than ever is adaptable workers, capable of making intelligent decisions and moving from job to job in the industry, and capable of contributing to the improvement of both the efficiency and the working conditions of the farm or agricultural business. This argument is not new; however, the conditions that make it true are new. The information age and the technological explosion, the Third Wave, make it true. Perhaps Dewey was right, but for the wrong reasons and at the wrong time.

If these contentions are true, then Prosser's Theorems 1 and 9 cannot be true and Theorems 2 and 3 must be held highly suspect. These cornerstones for vocational education advocate a mechanical adherence to the status quo. Certainly agricultural education must serve the field today just as it has all along; however, agriculture's needs are different than they were in 1915. The bases for theorems 1 and 9 are gone altogether and the bases for the other two theorems are certainly eroded severely.

Source of Teacher Expertise

Agricultural educators accept the importance of possessing subject matter knowledge. Old adages such as "you cannot teach what you do not know" and "teachers should know what they are talking about" are as accurate today as they were in 1917. It is crucial that both agricultural education teachers and their students possess subject-matter expertise.

The possession of pedagogical skills permitting agricultural teachers to share subject matter knowledge with their students is also essential. All agricultural educators have heard students describe a teacher who, "knows the content but cannot get it across to me." That individual may meet the Prosser and Snedden requirement of subject matter expertise, but still fall short of being a successful teacher.

A proportional balance of subject matter knowledge and pedagogical skills is needed. Prosser and Snedden clearly take a narrow and extreme stand favoring the former. Morgan (1980) notes that, "Snedden (1915) vehemently states that vocational education can only be imparted by persons who themselves are masters of the trade." (p. 35) Undoubtedly agricultural education teaching ranks would be greatly depleted if only "masters of the trade" were permitted to teach. Agricultural teachers are needed who have mastered and, at least, have experiences in the technical areas they plan to teach. To become a true "master of the trade" takes several years completing frequently repetitive experiences. The early concept was for a worker to spend several years (frequently seven) on a project which became known as the masterpiece. This would appear to be overkill on the part of vocational teachers today.

To reinforce the criticism of conventional teacher education Prosser and Allen (1925) noted the following points:

> The regular school system has for a long time included normal schools and colleges whose function is to train teachers for work in the general schools. If the preceding discussion of the conditions that exist in vocational training be sound, it is evident that the courses conducted in these institutions for prospective teachers of regular subjects can contribute little or nothing to the training of teachers in vocational subjects of secondary grade. (p. 289)

Theorem 7 insists that effective instruction will be proportional to the skills and knowledge of operations and processes possessed by the teacher. Logic would indicate that the balance of subject matter expertise and pedagogical skills could make the situation different. Clearly, the agricultural teacher who has weak subject matter expertise and weak pedagogical skills will fail. However, the teacher who has mediocre subject matter expertise and great pedagogical skills may well succeed. The converse is probably not true, in that a master of a trade who has no pedagogical ability will never be able to succeed as a teacher. To overemphasize one side of the balance toward subject matter, as Prosser has done, is to shortchange both the profession and the students.

Lack of Emphasis on Higher Cognitive Skills

Bloom, Engelhart, Furst, Hill, & Krathwohl (1956), in an extremely important piece of educational research, enumerate what they call a taxonomy of educational objectives. They divide all learning into three domains: psychomotor, cognitive, and affective. They further divide the cognitive domain into six levels with the lowest being knowledge, followed in order by comprehension, application, analysis, synthesis, and evaluation.

It is generally accepted that all three domains of learning as well as all six levels of cognitive learning are important to a complete education. Few would advocate that the higher levels of thinking and learning be left out of any educational program. In that regard, agricultural education is no exception.

Given that premise, it follows that agricultural education should systematically include mastery of higher level cognitive skills in its curricula. Yet, an examination of Prosser's Sixteen Theorems leads to the conclusion that such learning is at best inadvertently omitted and at worst systematically excluded. Theorem 6 refers to the fixation through repetition of "right" habits of thinking and doing. Theorem 3 is even more prescriptive in that regard. Theorem 11 tells us to get our curriculum from practitioners of the occupations being served.

How is this mandate from the early leader in vocational education being implemented today? We no longer need to rely on mere advisory committees (Theorem 11) to determine the content of a curriculum. Now we have the scientific tools of job analysis and task analysis combined with statistical analysis of validation data. We can indeed identify with scientific precision the specific competencies needed by entry level workers in specified occupations. Competency-based education, which is nothing more than the modern logical extension of the

Snedden/Prosser philosophy, goes to a specific occupation and determines those precise tasks that must be performed most frequently by practitioners in that occupation. Vocational teachers are then expected to teach their students to perform the tasks. But, what kind of tasks? The nature of the research procedure leads to the extraction of primarily manipulative procedures (psychomotor), knowledge (cognitive, level 1), and comprehension (cognitive, level 2). That research sometimes even leads to the conclusion that the learner needs to apply principles (cognitive, level 3). But consistently the tasks identified are those of the entry level worker. Such a worker is seldom required to perform analysis, synthesis, or evaluation (cognitive levels 4, 5, and 6, respectively). As a result, higher level tasks are rarely identified in the task analysis procedure. When they do emerge, they are identified as low priority tasks because they are not required of most entry level workers. Thus the three highest levels of cognitive operations are systematically excluded.

In a time when agricultural procedures and conditions are changing almost constantly, rote learning is of less value than it was in 1915. The ability to make judgments about changing situations, synthesize solutions to new problems, and evaluate the results is becoming increasingly important in the workplace. It may well be that such a mechanical approach was needed in the beginning. After all, it might have been possible to identify "right" habits and thinking in those slower paced and simpler days. Such is certainly not the case today.

Lack of Emphasis on Affective Skills

Contemporary agricultural educators are well aware of the importance placed upon the need for affective (feelings) skill development in graduates. Employers consistently tell vocational educators of the need for employees to get along with others, to give a day's work for a day's pay, and to get to work on time. All of these areas point to the need for affective development.

At best Prosser only hints at the affective domain in his theorems. Theorems 3 and 4 mention such words as thinking habits and interests. In a more detailed explanation, Prosser and Allen (1925) do not discuss affective skill development, but rather emphasize matching the students' interests with the right job. Certainly this is an important concept, but not what concerned employers are asking for in their beginning workers. Theorems 6 and 7 use the words "right habits" and "process habits." However, detailed discussion (Prosser & Allen, 1925) indicates the actual emphasis is on the repetitive training process or habit psychology and on using actual jobs; rather than affective skill development.

An excellent example of Prosser's thinking is the Smith-Hughes Act and its lack of emphasis on the affective area. It is generally accepted that vocational youth organizations are very effective tools in teaching affective skills, yet no mention was made in the Smith-Hughes Act of the role that youth organizations could play in vocational classes. It was eleven years later, in 1928, before the first national vocational youth organization was founded - The Future Farmers of America (FFA). (Vocational Education, 1968). Certainly, this was a slow start for such an important part of vocational education.

One of the unique strengths of vocational education is the three-way balance possible with the three educational domains of affective, cognitive, and psychomotor. Our youth organizations emphasize affective. Our classroom instruction emphasizes cognitive. Our laboratory instruction emphasizes psychomotor. With employers demanding affective skill development, vocational educators cannot afford to diminish its importance.

CONCLUSION AND RECOMMENDATIONS

Agricultural education was developed in a day when backbreaking, dull, repetitive jobs were the daily fare of the farmer. The future of America could be seen clearly in the semi-skilled and unskilled labor-intensive assemblyline production of goods and in the backbreaking work of producing farm goods, both for our own use and for world commerce. The traditional work setting was designed not for creature comfort but for mechanical efficiency. The needs of the worker were discounted in favor of production and profit. The common feeling was that workers should be glad that they could exchange discomfort in the workplace for a better lifestyle away from work (Camp, 1983).

Moreover, educational research and learning theory were in their infancy. The science of psychology was still in its developmental stages. The educational system was seen as the only way to reach the masses of our children, who after all were the workers of the future. Vocational education, as envisioned by David Snedden and Charles Prosser, was seen as the most effective means to make our industry competitive with Germany and other highly developed industrialized societies.

In the ensuing decades, America has changed from a labor intensive assemblyline industrial society to an information intensive, automated, and service oriented society. The quality of life not only at home but also at the workplace and on the farm has a higher priority on our national resources than ever before. The day is simply gone when publicly supported vocational education can be used as a direct servant of the existiing industrial structure.

The Sixteen Theorems of Charles Prosser have formed the basis for the development of vocational education and agricultural education as we know them today. Some of Prosser's Sixteen Theorems are so obviously true that they require neither refutation nor support. For instance, theorem 16 postulates that minimum funding levels are necessary for quality programs. At the same time, many of the key concepts of the theorems have raised great controversy from the very outset. Given the vast and unforseeable changes that have taken place in America over the past seven decades, their relevancy to today's vocational education must be questioned.

Agricultural education has a central part to play in the American educational system and in propelling this nation and its people into a bright future. It is time, however, that the profession reexamine its underpinnings with an eye to that future rather than to the past.

Educational or Scientific Importance

Many agricultural educators, upon cursory examination have accepted Prosser's Theorems at face value. The agricultural educator who looks beneath the surface and examines the literature discussing the theorems should find points of conflict. Prosser advocates a maintenance of the status quo, an exclusively subject matter based source of expertise for teachers, an emphasis on lower level skill development, and a lack of emphasis on affective skills. Agricultural educators have long implemented a philosophy the opposite of Prosser's on each of these points. Today's agricultural educators must go beyond Prosser's point of view and make public their unique philosophy.

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IN-HOUSE COMPUTERIZED DATABASE SEARCHES

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Presented to:
Southern Research Conference in Agricultural Education
Mobile, Alabama
March 23-25, 1985

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IN-HOUSE COMPUTERIZED DATABASE SEARCHES

INTRODUCTION

Do you remember the last time that you performed a search of the literature in preparation for a research study? In order to perform the search, you may have used one of several research tools such as the Current Index of Journals in Education (CIJE), Education Index, or a computerized data based search performed by your university library or your state department of education research division.

If you were lucky, the topic was listed in the way you expected, but it is more likely that you had to look up several variations of the topic or that you had to look up several related topics to find what you needed. Then, you had to go through the shelves of the library looking for the journals or other publications needed — sometimes a futile effort because of checked out books, torn out pages or other problems.

When you finished, did you have the feeling that you may have missed an important piece of literature? Did you have the feeling that there must be a better way to do literature searches? If so, you have just experienced a common frustration among researchers.

THE SOLUTION

The job of searching the literature in agricultural education can be done faster, better and usually cheaper by using computerized database services. There are several of these database services available. However, only two, namely, BRS and Dialog, appear to offer the types of databases that agricultural education researchers are interested in at an affordable cost.

Finding information in these databases is relatively easy for those who have a personal computer, a 300- or 1200-baud modem, a phone line, and a communications program (either as part of the system DOS or on diskette). You have the choice of searching by key words, key phrases, author, institution, journal, ERIC number, publication date, state or country, and numerous other ways.

Both BRS and Dialog offer special services to personal computer users in the form of scaled down versions of their full service. These services, BRS After Dark by BRS and Knowledge Index by Dialog, are extremely capable, cost less than the regular service and offer menus and other friendly tools to help you find information. It is important to note that the regular services cost more than most university departments can afford. Both services provide documentation manuals to help you learn how to use the service.

One of the reasons that BRS After Dark and Knowledge Index are so inexpensive is that the service is only available after 6 p.m. on weekdays and all day on weekends. Even though this may be inconvenient at times, any inconvenience is easily outweighed by saving 50-75% off of the cost of using the same service during weekday working hours.

BRS After Dark currently offers 51 databases while Knowledge Index offers 25 databases. The databases are aimed at business and professional personnel and are weighted heavily towards bibliographic databases.

For the purpose of this presentation, the rest of this paper will discuss the BRS After Dark service which is the one currently used at LSU. Even though only BRS After Dark will be discussed, Knowledge Index by Dialog is a good service and should be considered when selecting a data base service for research purposes.

BRS AFTER DARK

BRS charges a one-time subscription fee of $75.00. Coupons for reduced-price subscriptions can be found occasionally in home and computer magazines. The minimum monthly bill is $12.00 (the user receives two free hours of search time in return for the minimum fee).

The databases available and their costs are presented in Table 1. The database charges vary according to how much royalty is paid to the producer of the database. For example, ERIC does not charge a royalty for use of its service, therefore, the hourly charge is the basic $6.00 per hour. AGRICOLA charges a $4.00 per hour royalty, therefore, the hourly charge is a total of $10.00.

The hourly charges (including connect time and royalties) range from $6.00 per hour for databases such as ERIC to a high of $25.00. Dissertation Abstracts costs $16.00 per hour. Free phone line access is provided from major cities in every state through one of three telecommunication networks (Telenet, Uninet, or Datapac).

Many of the databases available on BRS After Dark are also available on Knowledge Index and other database services. In addition, BRS After Dark currently offers an electronic mail service.

Insert Table 1 about here

BEST COPY AVAILABLE

SUMMARY

Database searching is not difficult to learn and is certainly worth the time and effort. Like other computer-related endeavors, you may experience a little frustration with your initial efforts to work with online databases but the frustration will only be temporary. All graduate students and faculty are encouraged to use the service at LSU. Graduate students are expected to pay the costs of using the search service for their coursework.

For further information on the two services discussed, write or call:

Knowledge Index
Dialog Information Services
3460 Hillview Ave.
Palo Alto, CA 94304
Phones: 415-858-2700, 800-227-1927

BRS After Dark
BRS
1200 Rte. 7
Latham, NY 12110
Phones: 518-783-1161, 800-833-4707

Table 1

Databases Available From BRS After Dark

DATABASE	DESCRIPTION	PRICE/HOUR
SCIENCES/MEDICINE DATABASES		
ABLEDATA - of NARIN	Rehabilitative aids	$ 12.00
AGRICOLA (CAIN)	Agriculture	10.00
American Chemical Society Journals	Chemistry journals	21.00[a]
BIOSIS Previews	Biological sciences	13.00[b]
Chemical Abstracts	Chemistry	21.50
Combined Health Information	Health resources	8.00
Health Planning Administration	Health economics, planning and administration	20.00
INSPEC	Engineering	15.00
International Pharmaceutical Abstracts	Pharmaceutical science	25.00
IRCS Medical Science	Biomedical research	20.00[a]
Kirk-Othmer Encyclopedia of Chemical Technology	Chemical and engineering	20.00[a]
Mathematical Reviews	Pure and applied mathematics	13.00
MEDLARS	Medicine, nursing, dentistry	20.00
Medical and Psychological Previews	Medicine, psychology	20.00
National Technical Information Service	Government reports, all areas	8.00
Robotics Information	Artificial intelligence	12.00[b]
BUSINESS AND FINANCIAL DATABASES		
ABI/INFORM	Business	15.00
Abstracts of Working Papers in Economics	Economics	15.00
Harvard Business Review	Business and management	15.00
Internal Revenue Service Publications	Tax preparation information	10.00
Management Contents	Business	14.00
Micro-Software Directory	Computer software	20.00
Patdata	Patents registered since 1975	10.00

[a] Full text database   [b] plus $ .10 per citation hit

Table 1 (continued)

Databases Available From BRS After Dark

DATABASE	DESCRIPTION	PRICE/HOUR
REFERENCE DATABASES		
Abstrax 400	400 popular periodicals	14.00
Academic American Encyclopedia	Multi-disciplinary encyclopedia	12.00
Association Publications in Print	Association publications	16.00
Books in Print	U.S. books in print	14.00
Dissertation Abstracts	Dissertation abstracts	16.00
Internal Revenue Service Publications	Tax preparation information	10.00
National College Databank	College and university profiles	16.00
Micro-Software Directory	Computer software	20.00
EDUCATION DATABASES		
Bilingual Education Bibliographic Abstracts	Bilingual/bicultural education	6.00
Education Resources Information Clearinghouse (ERIC)	Education	6.00
Education Testing Service Tests	Testing	18.00
Exceptional Child Education Resources	Exceptional child education	11.00
National College Databank	College and university profiles	16.00
Ontario Education Resources	Research reports/curriculum guidelines	11.00
Resources in Computer Education	Computer education	11.00
Resources in Vocational Education	Vocational education resources	6.00
Resource Organizations/ Meetings for Educators	Educators meetings/organizations	6.00

Table 1 (continued)

Databases Available From BRS After Dark

DATABASE	DESCRIPTION	PRICE/HOUR
EDUCATION DATABASES — continued		
School Practices Information File	School practices	6.00
Texas Education Computer Cooperative	Software evaluations	12.00
Vocational Education Curriculum Materials	Vocational curriculum	6.00
SOCIAL SCIENCE AND HUMANITIES DATABASES		
ABLEDATA - of NARIC	Rehabilitative aids	12.00
Catalyst Resources for Women	Women's resources	21.00
Language and Language Behavior Abstracts	Language literature	20.00
Family Resources	Marriage and family literature	12.00
Mental Measurements Yearbook	Standardized testing materials	20.00
National Rehabilitative Information Center	Rehabilitation literature	6.00
Public Affairs Information Service (PAIS)	All social sciences	13.00
PSYCINFO	Psychology	14.30
Religion Index	Religion	13.50
Social Science Citation Index	Social science	20.00
Sociological Abstracts	Sociology	20.00

Research in Agricultural Education: A Discussion of Specific Reports*

This reaction is designed to raise questions about the conduct of and the implications to the profession of specific research reports presented at the Southern Research Conference in Agricultural Education in 1985.

Report One

Two reports given by John Crunkilton and Bill Camp of Virginia Technological Institute and State University were combined. One dealt with people, the second with events which contributed the most to the development of the agricultural education profession.

Currently well-known and influential teachers, supervisors, and teacher educators, along with prominent retirees representing these three groups were chosen to answer the question: What profession members/events have contributed the most to the historical development of agricultural education? This is interesting research that identifies people and events contributing to our profession. This research, though, has limited utility in current practice.

Questions that could be asked include:

1. Were procedures used in selecting the panels adequate? Were panel members representative of institutions and geographic areas? Was non-response bias a factor?

2. In the case of identifying important people, 175 were initially identified by the panel. Twenty eight of the 175 were nominated three or more times and were submitted to the panel in the second round. Are the researchers comfortable with eleiminating 147 contributors? Is it possible that some of these weren't suggested originally but would have been voted for in the second round if procedures allowed it? Why were Charles Prosser and his theorems omitted?

3. Five criteria were used by respondents to rate the people/events on the second round. Some of the criteria asked the respondents to rate each person/events on the list. Other criteria asked respondents to make a generalized rating, not necessarily related to other poeple/events on the list. Would consistent criteria have yielded different ratings?

Again, this is interesting research. Its utility could be enhanced by a follow-up focusing on the philosophical and psychological principles associated with the people and events identified.

Report Two

Asiabaka and Moore reported results of a study comparing vocational agriculture teachers prepared by Land-grant and non-Land-grant institutions. The idea behind the research is based on the premise that adding new teacher education in agriculture departments to non-Land-grant schools is one way to overcome the persistent shortage of vocational agriculture teachers. This premise may not be very sound from an economic standpoint. Using rough estimates, the following case is offered:

Costs of operating new department (annually):

1. Faculty-3 FTE at $30,000	$90,000
2. Secretarial-1 FTE at $10,000	10,000
3. Operating budget	5,000
4. Indirect costs (facilities, utilities, etc.)	10,000
TOTAL ESTIMATED COSTS	$115,000

Assuming these estimates are close and that our goal is to increase (recruit) vocational agriuclture teachers, could the $115,000 per year be more effectively used? These dollars could provide $1,000/year scholarships to 115 students or $5,000/year to 23 students. This procedure would probably yield more benefits in terms of increasing the number of vocational teachers than would the establishment of a new department.

Moving beyond this premise, the procedures followed were sound, including random sampling of subjects, excellent instrument reliability, and good accounting of non-response bias. It is also commendable that the authors offer up as a part of the measuring instrument a procedure for critique which measures extent of activity in FFA, SOE, and adult instruction.

Questions that could be raised include:

1. Since teachers who have finished one year of teaching are compared, are there factors that might tend to equalize initial differences, e.g., beginning teacher programs, graduate courses, workshops, and actual program development and implementation?

2. What consideration was given to concurrent or predictive validity of the instrument used to measure perceived teaching ability?

3. Why is the correlation between agricultural knowledge subscale scores and overall agricultural knowledge score so low?

4. How qualified are most school principals to evaluate teachers on subject matter knowledge and other subscale scores?

5. How valid is the rationale for weighing different aspects of activity scores, e.g.,:

   a. why use the same weight value for "using the official FFA treasurer's book" as "submitting proficiency awards"?
   b. Why would more weight be assigned to participating in "Food for America" or "National FFA Week" than for "using committees to carry out the FFA program of activities" or "having a written POA"?

6. It is assumed that adult instruction is an important part of vocational agriculture programs. Over twice as many LG-prepared teachers taught adults as did NLG-prepared teachers. Why did this contribute so little to the total score—a difference of less than half a point in a total of almost 200 points?

The greatest value of this research is the effort to provide a way to measure the extent of participation in vocational agriculture and the inclusion of factors based on the "effective schools research" (Rosenshine and Furst). The research is also based on an effective literature review.

Report Three

This report by David Drueckhammer is titled "Follow-up of College of Agriculture Graduates at Oklahoma State University: 1979-83." It was designed to collect information about positions and salary ranges of graduates, relationship of degree and employment area, adequacy of their preparation, and factors influencing the graduates' decision to earn a degree in agriculture. It is well written and organized and reminds us of several functions with which we should be concerned, such as recruitment, placement and follow-up, and counseling.

Two major questions are raised about this study:

1. What is the effect of non-response bias? In this type of study where students are evaluating educational programs, reporting their salaries, etc., non-response bias is particularly significant. In this study, approximatel four out of ten did not respond. Chances of differences between respondents and non-respondents are great.

2. Can very generalized conclusions be supported by one source of information? For example, evaluating the adequacy of an educational program and concluding that a program is good based only or responses of graduates is weak. Employers' opinions might add additional insight.

This should not detract, though, from the need to evaluate and improve what we are doing. The researcher is commended for this effort.

Report Four

Hillison and Camp of Virginia Tech are authors of this report titled "Prosser, Snedden, and Conflicts with Agricultural Education: An Historical Perspective."

It is an excellent idea to consider the role of vocational agriculture during this era of reforms. This well-written historical research provides a basic background showing conflicts in roles of vocational agriculture from the beginning. Being historical research and depending entirely on written information, though, causes one to raise the question of whether or not the nine sources are adequate as a data base.

One issue raised is whether to prepare graduates for the present or the future. This, however, is not a realistic question. To be successful, we must do both. Graduates must be able to perform at a minimum level from the beginning, then improve and adapt into the future.

Another point raised is the lack of affective skills in Prosser's theorems. Prosser wanted trained and subserviant workers for the new industrial society. We should develop contributing members of society who have the desire and ability to not only be good workers but to contribute to the improvement of society on a broader scale.

This paper also pointed out the weakness of curricula based strictly on competency studies. Years ago, Ralph Tyler emphasized the need to use several sources of information in determing the purposes of a curriculum. It is good to consider our origin. It is even better to use this and other information in proactively planning for the future.

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*Presented by Ronald A. Brown, Professor of Agricultural and Extension Education, Mississippi State University, at the Southern Research Conference in Agricultural Education, March 25, 1985, Mobile, AL.

FIFTH GENERAL SESSION

Susan Everett - Presider
North Carolina State University

Prince Preyer - Facilitator
Alabama A&M University

Writing Books and Journal Manuscripts*

by

John R. Crunkilton
Professor and Program Area Leader
Agricultural Education
Virginia Polytechnic Institute and State University

> "Dear Contributor, Thank you for submitting your manuscript. We regret it does not suit our present needs."

(Transparency 1)

This cartoon by Schulz illustrates a situation that relates to all of us. And as universities continue to increase the emphasis upon scholarly writing, we don't want to open a letter and find this message. The publish or perish environment is not new to us in education. The encouragement to write has been with us in institutions of higher education for a long time and it does not seem to be easing. The bottom line is that you may not perish if you don't write, but you will not enjoy the merit salary raises, promotions, or national recognition that your colleagues enjoy, especially those who can demonstrate that their writings have been published by book companies, refereed journals or magazines.

You may well ask, "Why write?" Can't I make an impact in education through my teaching, service, or even research projects where writing is not essential? The answer is yes you can. But writing adds a dimension to our educational mission that cannot be met in other ways. We are professionals, in charge of and responsible for preparing future professionals. We cannot take lightly our role in preserving the history, facts, foundations, beliefs, practices, and unique characteristics of our profession and how these can serve to direct our future programs, research and guide the newcomers in our profession. We have the opportunity to write in our democratic society and we must take full advantage of that opportunity. Have you ever noticed the value placed upon something written? We as a society have built and established great libraries holding millions of works, filing systems, and now computers to record what we know or believe. Writing is much more accurate than speech, because writing allows you to place into words exactly what you mean and writing never forgets what you said.

In the next few pages, I'll outline some areas each person ought to consider when they set about to write something they hope will be published. Areas to be covered included a flow chart of activities, checklist to guide progress, problems to avoid, and guidelines to help increase the chance at publishing.

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*Paper presented at the Southern Research Conference in Agricultural Education, Mobile, Alabama, March 24, 1985.

The first flow chart (Transparency 2) highlights some areas to consider in writing a book. But before we really discuss this chart, I must caution you that before you write a book or a journal manuscript, you must have something to say and know how to say it. Unsound and improper writing will soon establish a certain reputation for you, your institution, and your profession. Now lets look at the flow chart.

Step 1 - You start with an idea. It can be an old idea stated differently; a new idea; a new finding; a procedure; a review of research literature, a feature, a position statement, a book review and so forth.

Step 4 - In some cases, 1-3 chapters may be asked as samples of your writing. It is also at this time you would need to provide a table of contents and a detailed outline of the book.

Step 7 - The contract should be checked for: royalties for international sales; editorial support; writing schedules and penalties for missed deadlines; cash advances; author's charges; teaching guides or aids; copyright holder; and free copies (usually 2-20).

The last thing I would mention is that the time from beginning of an idea to the actual printed book being received usually takes 2-4 years, depending on how fast you write.

A similar flow chart (Transparency 3) has been developed for preparing a journal manuscript. It is somewhat less complicated than the flow chart for publishing a book.

A checklist (Transparency 4) will help to guide your activities and help to meet established deadlines. This checklist is also very useful when co-authors are collaborating on writing projects. You notice that chapters of the book can be listed on the left, activities identified at the top, and target dates can be set for each activity if you desire.

One way to help promote the chance that what you write will be well received is to be aware of the manuscript problems encountered by publishers or editors. Oliver (1985) listed the following 14 problems noted by reviewers of manuscripts for the JVER.

1. Topic inappropriate for JVER.
2. Work unimportant for national audience.
3. Purpose and/or problem not clearly specified.
4. Hypotheses/research questions not clearly stated.
5. Literature review inadequate.
6. Research design inappropriate, inadequate, or not clearly described.
7. Sampling method inappropriate or not clearly explained.
8. Reliability and validity of instruments not demonstrated.

9. Statistical analysis inappropriate or not clearly described.
10. Assumptions underlying statistical procedure not met.
11. Results not clearly presented.
12. Conclusions invalid or not meaningful based on results.
13. Discussion not related to findings of study.
14. Manuscript not prepared according to APA style (including paragraphs and headings, references, tables, figures, writing style, grammar, punctuation, spelling, capitalization, and numbers).

Problems with manuscripts for commercial publishers may not be similar to the list just mentioned. The two major **challenges** for those aspiring to write a book is first to identify an area which is of interest to both you and the publisher and second, write in such a manner that the publisher is positive about the sample chapters and proposed outline for the book.

Remember the following when considering an idea for a book:

1. You must have something to write about.
2. You must be able to write for the intended audience.
3. Check out the contract.
4. Meet all deadlines.
5. Publishers are in business to make money. Limited sales for a book usually means a rejected book idea.
6. Technical books bring more royalties to authors than professional books.

Logical questions that are always asked by younger members of the profession are "How can I start my writing career?" or "How can I increase the likihood of my writing being published?" Here are some guidelines to follow?

1. Research your audience.
2. Research the types of articles accepted by journals or books published by companies.
3. For journals, review previous issues for themes. Timing is important.
4. Materials must be fresh and applicable to programs tomorrow.
5. For research projects, prepare an article within one year of the project completion.
6. Make contact with the editor or publisher before writing the entire manuscript.
7. Do your homework before writing.
8. Good writing comes from hard work.
9. Ask colleagues to review your work before submission.
10. For the younger professional, seek out successful colleagues as co-authors. For the seasoned writer, seek out younger colleagues as co-authors.
11. For prospective books, provide the publisher with market information or projected sales and audience numbers.
12. Set a goal to write.

In the beginning, I mentioned the need and value of why we should write in our profession. Remember, students learn through your writings as well as through your class lectures and presentations. We as supervisors and teacher educators learn from each other, both discussions and reading each others writings. It is absurd to believe that all learning occurs in the classroom. Our knowledge becomes more professional as we write and our writings become more professional as our knowledge develops. And now, go write.

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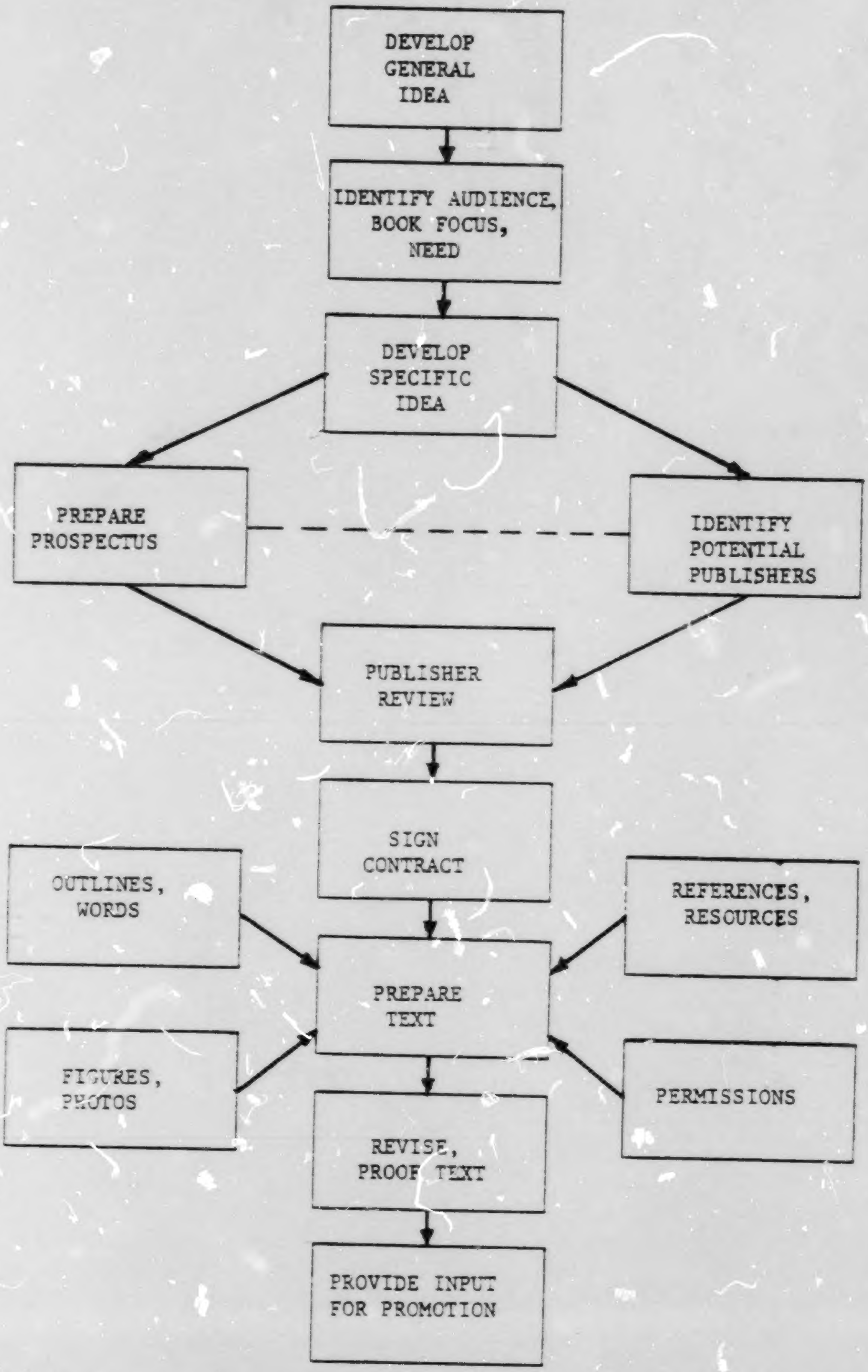
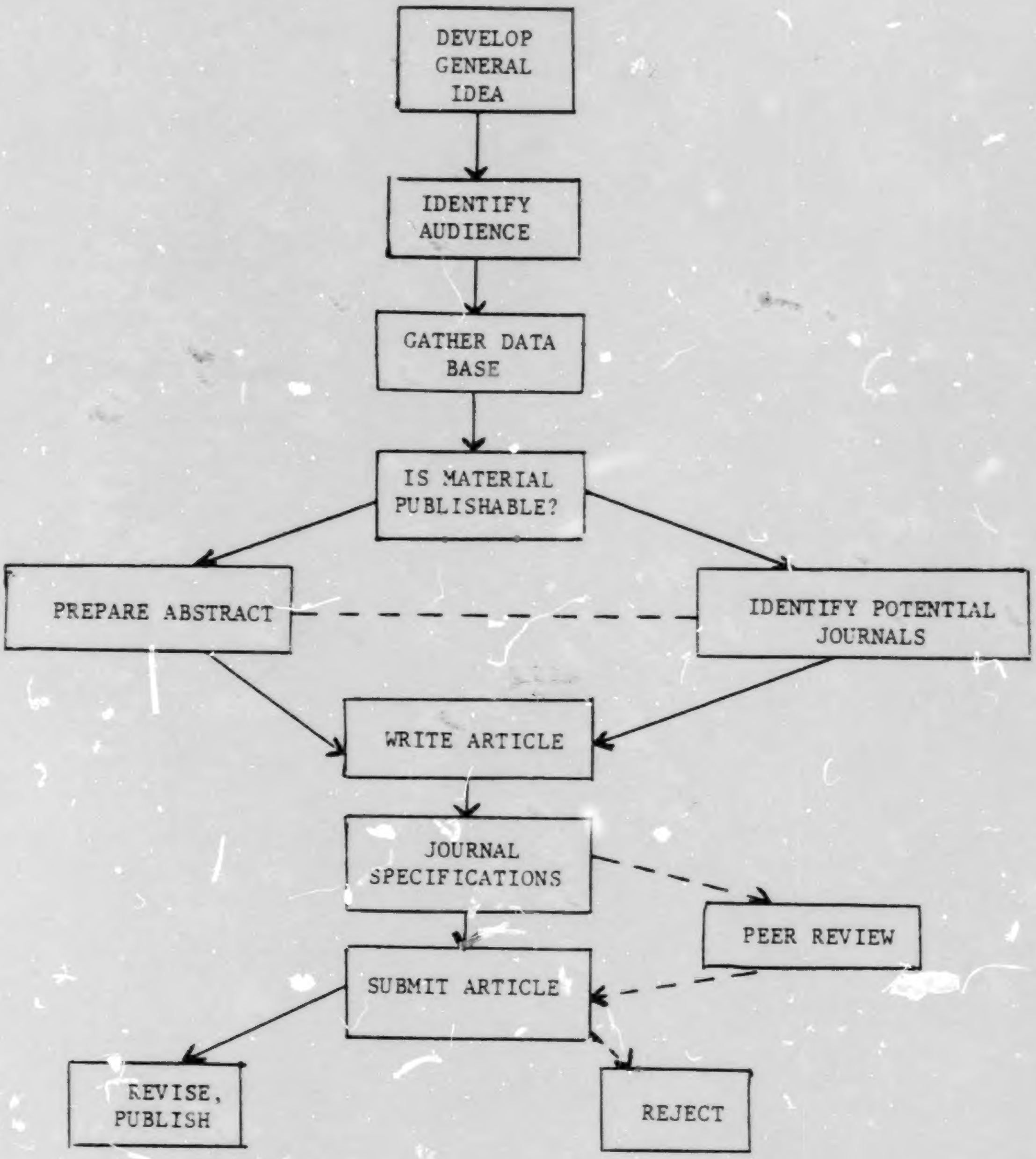
FLOW CHART FOR WRITING A BOOK


DEVELOP GENERAL IDEA
IDENTIFY AUDIENCE, BOOK FOCUS, NEED
DEVELOP SPECIFIC IDEA
PREPARE PROSPECTUS
IDENTIFY POTENTIAL PUBLISHERS
PUBLISHER REVIEW
SIGN CONTRACT
OUTLINES, WORDS
REFERENCES, RESOURCES
PREPARE TEXT
FIGURES, PHOTOS
PERMISSIONS
REVISE, PROOF TEXT
PROVIDE INPUT FOR PROMOTION

Source: Finch, Curtis R. Writing Professional Books

Transparency 2

FLOW CHART FOR JOURNAL MANUSCRIPTS


DEVELOP GENERAL IDEA
IDENTIFY AUDIENCE
GATHER DATA BASE
IS MATERIAL PUBLISHABLE?
PREPARE ABSTRACT
IDENTIFY POTENTIAL JOURNALS
WRITE ARTICLE
JOURNAL SPECIFICATIONS
PEER REVIEW
SUBMIT ARTICLE
REVISE, PUBLISH
REJECT

Transparency 3

	Curr. Dev. in VTE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
NO.	Chapters	Person Responsible	Detailed Outline	First Draft	Reviewed	Second Draft	Final Copy	Permissions	Figures Drawn												
1	An Overview	CF	x	x	x																
2	Cont. Designs	CF	x	x																	
3	Making Decisions	JC	x	x	x	x	x														
4	School Data	JC	x																		
5	Comm. Data	JC	x	x																	
6	Det. Curr. Con.	CF	x																		
7	Curr. Dec.	CF	x																		
8	Goals & Obj.	JC	x	x	x	x															
9	Curr. Mat.	JC	x																		
10	Dev. Curr. Mat.	JC	x	x																	
11	CBE	CF	x																		
12	Eval. Curr.	CF	x	x	x	x	x														
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Transparency 4

SIXTH GENERAL SESSION

Bob Drake - Presider
Auburn University

Tom Curry - Facilitator
University of Florida

Don Herring - Reactor
Texas A&M University

VI

ON RESEARCH METHODOLOGY:

THE CASSETTE TAPE AS A DATA COLLECTION MEDIUM

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and

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Presented at the Southern Research

Conference in Agricultural Education

Mobile, Alabama

March 1985

INTRODUCTION

Data, especially from surveys, have been gathered through the use of a variety of media. Traditionally, the mailed questionnaire as a medium has dominated all other forms of data collection procedures in agricultural education research (Mannebach, McKeena & Pfau, 1984). Researchers have also employed the personal interview as a data search procedure in their research. Yet another data gathering procedure is the use of the telephone.

Each of these three more commonly used procedures has merits and attendant problems as well. For example Orlich, et al. (1975), Som (1973), and Raj (1972) made a good case for the use of the mailed questionnaire while Frankel & Dutka (1983), Maclean & Green (1979) and Meyer (1971) pointed out the many serious drawbacks in using the procedure. Personal interviewing as a data collection procedure has been studied extensively by Cannell, Oksenberg & Converse (1979). They along with Weissman (1981) have discussed in detail the strengths and weaknesses associated with personal interviews as a data gathering procedure. In particular, the case against the procedure relates to the reliability of responses (data) on very sensitive issues.

The telephone has also gained currency of use by researchers in data collection. Thus, Finley and Key (1983), Miller (1983), Dillman (1979), and Groves and Kahn (1979) recommend the use of the telephone over personal interviews and mailed questionnaires. They argue that it helps reduce error variance, which could result from evasiveness or incorrect responses by respondents on sensitive issues. However, Sudman (1981, p.1) made a forceful case against the use of the telephone thus:

"There may be slightly higher refusal or don't know responses and shorter answers -- because respondents' suspicions may be higher while motivations to talk are not as great."

Research methodologists have not given much attention to the use of the cassette tape as an alternate data collection procedure to the mailed questionnaire, interviewing, or telephone. As a data gathering medium, the cassette tape appears to have distinctive merits as pointed out by Dubridge (1981). He identified three characteristic merits of this medium as (1) control or directness, (2) informality, and (3) flexibility of communication. Empirical research on the relative efficiency of this medium to other media has not been undertaken. In the meantime, researchers who have had experiences with the cassette tape as a data collection medium could share them with the research community.

OBJECTIVES OF THE PAPER

The primary goal of this paper is to share the researchers' experiences of using the cassette tape as a data collection medium with the research community within the profession. Specific objectives are to:

1. Discuss the merits and problems associated with the use of the cassette tape as a data collection medium.
2. Present evidence from a 1984 study in support of some of the identified merits and problems of using such a medium.

METHODS AND PROCEDURES

During 1984 an instrument was mailed to 117 agricultural teacher educators who had served on one or more assignments at foreign locations. The research instrument contained 19 questions. Most of the questions solicited largely qualitative data pertaining to issues such as major problems encountered while on foreign assignments, accomplishments, perceived future role of the agricultural education profession in Third World development, and advice to first-timers on the international development scene.

Each teacher educator received a package which contained the instrument and a blank audio cassette tape. The instructions requested the teacher educator to record his/her responses to the questions on the audio cassette tape. Four follow-ups resulted in a 97 percent response rate.

One of the questions on the instrument had to do with the data collection technique. The question was "Would you have preferred providing this information using some other method? Please be specific." In this paper, we shall share our experiences together with the reactions of the respondents toward the use of the audio cassette as a data collection method.

RESULTS

Merits of Using the Cassette Tape

Respondents' reactions to this method of data collection fell into six main categories.

1. Time - Most of them thought it was time-saving and much quicker for the kind and amount of information requested.
2. Volume of Information - Others thought the approach was very useful for gathering large amounts of information as was the case in this study.

3. Free-disclosure - A few respondents felt they were much more at ease, loosened up to respond to the questions.
4. Thought-provoking - Some of the respondents believed the method allowed them to think much more deeply before responding to questions.
5. Efficiency - One respondent thought the approach was a very efficient way to get information. He noted "If a person writes out his/her answers they might be a little more condensed. But then again, they are less likely to do it."
6. Novel Idea - Several respondents believed the method was unique, novel. As one of them noted " I find this method very unique." Another respondent observed: "It's a unique idea. I'm happy to do it." Yet still another observation was: "I must admit this is a very novel but a time-saving way of providing this information."
7. General Comments - Many respondents remarked they were comfortable with the method. Examples of these include: "This method of collecting data was quite acceptable," "This suits me just fine," "Heck! This was a real treat. I enjoyed responding over the tape recorder," and "I think you had a good idea in using a tape recorder for your responses."

Problems Associated With the Method

Both actual and potential problems attend the use of the cassette tape as a data collection medium. These are addressed below:

1. Time - Some respondents complained the method was time-consuming. (They actually wrote their responses on the

research instrument instead of recording them on the tape. Generally, the people who said this had not been extensively involved in international activities.)

2. Reviewing Responses - Another issue of concern for a few of the respondents was the difficulty of reviewing their responses. As one respondent said "The only problem is one cannot easily review the responses that one has made."
3. Use of Information - One respondent's legitimate concern was: "However, there will be probably some concerns if some quotes are taken out of context then used in a thesis. Normally, I would prefer putting down in writing anything that might be quoted in exactitude. If quotes are misused it could cause later problems."
4. Transcription of Data - A number of respondents thought the researcher would definitely have problems trying to transcribe information. The researcher's time, they seemed to imply, was at a premium too.
5. Analysis and Evaluation: Some of the respondents correctly recognized the problems associated with data analysis and evaluation. An example of these recognitions included: "I believe it would be a good way to respond but perhaps more difficult to analyze."
6. Interpretation - A related problem to data analysis and evaluation is interpreting the information. One respondent said among many other things: "...One of the major problems of using a tape recorder for a study of this type is that you have to interpret what the person filling out the research information form is really trying to say."

7. Untenable Assumptions - Two such assumptions emerged by the end of the data gathering phase of the study. The first was that all respondents have access to tape recording equipment. The other was that the cassette tapes were all usable. The untenability of the first assumption is supported by the remark of one respondent thus "...I might have been able to get the information to you quicker had I not had to arrange for a tape recorder and take the time to record it." Another respondent said "It required that I get a tape recorder to work to make sure that it was operating before I completed this questionnaire.

On the problem with the second assumption, one respondent noted: "Yes. Your tape was bad for some reason. I lost patience in working with it and gave up. My time is too valuable to be wasted on poor tapes. ...Sorry about your desire to have this on tape. Sometimes our best plans don't work out."

CONCLUSIONS

Findings from this study as they relate to the issue of research methodology are interesting. First, we conclude that the cassette tape has great potential as a data collection medium in research especially when highly qualitative data are needed. Also, we can conclude that the researcher interested in the use of this method should understand there are some problems associated with its use. Researchers could learn from our experiences by first, reducing the nagging problems associated with this data collection method outlined while at the same time capitalizing on the merits. The key to successful use of the procedure appears to be adequate and detailed planning for the data transcription and analysis phases particularly. Obviously, the medium is ideal for gathering information on research issues that address the state-of-the-art or state-of-the-situation.

RECOMMENDATIONS

Results of and experiences from the study have one major significance to research methodology. The findings seem to strongly suggest that the cassette tape is a viable alternative in data collection under certain circumstances dictated by the nature of the data of interest. Thus it appears to be more amenable to highly qualitative rather than quantitative data. Consequently, it might become too awkward for Likert-type survey instruments. Another necessary precondition for efficiency of use is the ability of the respondents to express themselves verbally. We suggest that researchers seriously consider the use of the procedure in data collection when the two assumptions are fully met.

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LAND-GRANT OR NONLAND-GRANT UNIVERSITIES:
WHICH PRODUCES THE BEST VOCATIONAL AGRICULTURE TEACHER?

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Paper presented at the Southern Research Conference
in Agricultural Education
Mobile, Alabama
March 1985

INTRODUCTION/NEED FOR THE STUDY

A variety of suggestions have been offered for reducing the shortage of vocational agriculture teachers. Luft and Bender (1974) encouraged the profession to recruit more potential students. Several teacher educators (Kindschy, 1974; Knight, 1980; Lee, 1978) suggested that recruiting teachers from industry might help solve the teacher shortage. A third procedure which has emerged in some states during the past decade has been to increase the number of colleges and universities which prepare teachers of vocational agriculture.

Research by Craig (1982) has revealed that the number of students recruited into teacher education programs since the mid 1970s has decreased. It appears the profession has not heeded the advice of Luft and Bender.

The idea of recruiting teachers from industry has been critically examined by several teacher educators (Bender, 1978; Dickerson, 1983; Knobel, 1977; and Moore, 1975.) After observing industry teachers or conducting empirical research on the teaching ability of these teachers the aforementioned teacher educators expressed concern about recruiting teachers from industry.

In several states such as Arkansas, Missouri, and Oklahoma the number of institutions which can prepare teachers of vocational agriculture has increased during the past few years. This has caused some concern in the profession. The institutions which are adding teacher education program are typically small, regional institutions which had their beginnnings as junior colleges or normal schools. While there has been debate (Sabol, 1979; Weston, 1979) over whether or not these nonland-grant universities should be allowed to prepare teachers of vocational agriculture there is no empirical research which documents the effectiveness of nonland-grant or land-grant institutions in preparing vocational agriculture teachers.

OBJECTIVES OF THE STUDY

The objective of this research was to compare the teaching ability, program activity, and attitudes of vocational agriculture teachers who received their training at land-grant and nonland-grant universities. Specific objectives were:

1. To determine if there were differences in the teaching ability of vocational agriculture teachers according to the type of institution (land-grant or nonland-grant) from which they graduated as perceived by administrators of the schools where the teachers were employed.

2. To determine if there were differences in the degree of activity of the Future Farmers of America (FFA), students' Supervised Occupational Experience Programs (SOEP), and Young/Adult Farmer Programs conducted/supervised by the two groups of teachers (land-grant and nonland-grant universities).

3. To determine if there were differences in the attitudes of the two groups of teachers (land-grant and nonland-grant) toward FFA, SOEP, and Young/Adult Farmer Programs.

METHODS AND PROCEDURES

Population And Sample

The primary population for this study were vocational agriculture teachers who entered teaching in 1981-82 and who received their undergraduate degrees from land-grant and nonland-grant institutions in the ten states which have both types of institutions.

According to Craig (1983) there are ten states (Arkansas, California, Illinois, Kentucky, Louisiana, Missouri, Oklahoma, Tennessee, Texas, and Wisconsin) which have both land-grant and nonland-grant institutions preparing vocational agriculture teachers. The 37 institutions (excluding 1890 land-grant universities) in these states had 333 graduates who entered the teaching profession in 1981-82. The researchers contacted all 37 institutions and asked for a list of the names and current addresses of the 333 graduates who had entered teaching in 1981-82. All the institutions responded. Three hundred people were identified as still teaching vocational agriculture. Of the 300 teachers identified, 99 were graduates of land-grant universities and 201 were graduates of non-land grant institutions.

Using a table of random numbers, a proportionate random sample of 200 teachers was drawn from the population. There were 66 teachers from land-grant institutions and 134 teachers from nonland-grant universities in the sample drawn. The size of the sample drawn was more than adequate according to the criteria established by Hinkle, Oliver, and Hinkle (1983) or Krejcie and Morgan (1970).

There were several reasons for selecting teachers who had graduated in 1981-82. At the time the study was conducted most of the teachers would be in their second year of teaching. They should be past the trauma of the first year; the teacher training program they had experienced should still be reflected in their teaching; and they should not have earned the masters degree which might influence their teaching.

The 1890 land-grant universities were excluded from this study because of the low number of graduates who entered teaching.

The high school principals of the schools where the two hundred vocational agriculture teachers were employed were included in the study to supply information concerning the teaching ability of the teachers (Objective 1).

Instrumentation

Two different instruments were used in collecting the data. The first instrument was used to assess the teaching ability of the teachers. This instrument was developed by Moore (1980) after a thorough review of the literature on teaching effectiveness and extensive field testing. The instrument contains 22 items which factor into three major categories - teaching ability, subject matter knowledge, and program involvement. For each item the respondent is asked to assign a numerical rating of from one to ninety-nine. A score of 50 on an item is considered average while one is very low and 99 is considered very high. In a nationwide study of vocational agriculture teachers Moore reported a reliability of .96 on the instrument. In a study of teachers in Louisiana, Grady (1984) reported the instrument achieved a reliabilty of .97. In this study the Cronbach's alpha reliability coffecient was .96.

The second instrument was used to collect information from each vocational agriculture teacher. This instrument was developed by the researchers after a review of the literature, field testing the instrument with a group of vocational agriculture teachers in Indiana, a review of the instrument by teacher educators at LSU, and finally a review of the instrument by a national jury of recognized scholars in agricultural education. This instrument asked for demographic data, information about the activities of the FFA, SOEP, and young/adult farmer programs supervised by the teacher, and a section which assessed the attitude of the teacher toward the FFA, SOEP, and young/adult farmer programs. The activities section of the instrument sought both interval data (such as number of meetings, awards, etc.) and nominal data (yes or no). The 30 attitude statements on the instrument used a one to eleven Likert-type scale rating. This instrument yielded a Cronbach's alpha reliability coefficient of .85.

Data Collection

All data were collected through the mail. After the initial mailing and two follow up letters to each of the groups the following response rates were realized:

Vocational Agriculture Teachers (200 were in the sample)
151 total responses (75.5%)
145 were usable (72.5%)

High School Principals (200 were in the sample)
175 total responses (87.5%)
165 were usable (82.5%)

A random sample of ten vocational agriculture teachers was drawn from the non-respondents and contacted by telephone to determine if they were different from the respondents. By comparing their responses with the respondents on selected items on the instrument it was decided they did not constitute a different population. The response rate of the school principals was considered adequate (Babbie, 1973); therefore, further follow-up was not conducted.

RESULTS

Findings

Teaching Ability

The teaching ability of the vocational agriculture teachers was assessed by the principals in the schools in which the teachers were employed. The principals were told the purpose of the research was to identify strengths and weaknessess of teachers in order to improve teacher education programs. They were not told that teachers prepared at land-grant universities would be compared with those prepared at nonland-grant universities. Eighty-six percent of the principals who responded indicated the teacher involved in the study had been observed by them at least twice during the year. An additional 12 percent of the principals indicated the vocational agriculture teacher had been observed once.

Teachers from both land-grant and nonland-grant institutions were rated above average by the principals. The mean rating on the 19 items which comprise the three sub-scales for the land-grant teachers was 71.93 while the mean rating for the nonland-grant teachers was 72.74 (A score of 99 was highest possible). The difference in mean scores was not statistically significant using an independent sample t-test at the .05 alpha level t(163) = 0.89, p>.05. The mean scores for all items on the instrument are presented in Table 1.

Eight items on the instrument comprised the teaching ability sub-scale. The mean score for land-grant teachers on items in this sub-scale was 69.33 while the nonland-grant teachers averaged 70.97.

The program involvement sub-scale consisted of five items. The mean score per item for land-grant teachers on this sub-scale was 73.12 while the nonland-grant teachers averaged 74.08.

The third sub-scale, which consisted of six items, was subject matter knowledge. Land-grant teachers had a mean item score of 74.4 while non-land grant teachers averaged 73.98.

Three additional items were on the instrument. Two of the items are used to verify internal consistency of the instrument. One item states "The teacher's overall knowledge and skills in the agricultural subject matter is ___." This item is expected to correlate highly with the subject matter sub-scale score. The second item, "The overall teaching effectiveness of this teacher is ___." The score on this statement is expected to correlate highly with the teaching ability sub-scale score. High correlations on these two

Table 1

Teaching Ability of Land-grant and Nonland-grant Vocational Agriculture Teachers as Perceived by School Principals

Item	Mean Rating	
	Land-grant (N=54)	Nonland-grant (N=111)
Ability to motivate students	65.17	69.86
Ability to relate to students	68.64	72.29
Use of questions while teaching	69.33	69.46
Uses a variety of teaching techniques	68.00	68.00
Is enthusiastic	74.26	77.31
Ability to plan lessons	70.42	68.58
Ability to hold attention of class	68.67	70.06
Control of the classroom	70.13	72.70
Mean Teaching Ability Sub-Scale Score	**69.33**	**70.97**
Participates in professional activities	74.55	77.41
Works with the FFA	82.31	83.73
Supervises student projects or work experience	75.90	75.98
Manages the agricultural laboratory	69.64	71.60
Participates in vocational instruction for adults	63.20	61.69
Mean Program Involvement Sub-Scale Score	**73.12**	**74.08**
Knowledge and skills in horticulture	68.02	70.63
Knowledge and skills in agricultural mechanics	74.74	70.85
Knowledge and skills in animal science	77.82	79.10
Knowledge and skills in crop production	75.26	74.98
Knowledge and skills in resource conservation	73.89	72.56
Knowledge and skills in farm management	76.67	75.73
Mean Subject Matter Knowledge Sub-Scale Score	**74.40**	**73.98**
The teacher's overall knowledge and skills in the agricultural subject matter:	77.56	77.17
The overall teaching effectiveness of the teacher:	72.72	73.70
This person's teacher preparation program was:	74.29	75.64
Overall Mean Rating - 19 items	**71.93**	**72.74**[*]

Note. The response scale ranged from 1 to 99. A score of 1 is very poor, 50 is average, and 99 is excellent.

[*] $t(163) = 0.89$, $p > .05$

items provide an additional measure of internal reliability. The third item, "This person's teacher preparation program was ___." stands alone.

The mean score on the overall subject matter knowledge question was 77.56 for the land-grant teachers and 77.17 for the nonland-grant teachers. The correlation for this score and the knowledge sub-scale score was .46 The mean score on the overall teaching effectiveness item was 72.72 for the land-grant teachers and 73.70 for the nonland-grant teachers. The correlation for this score and the teaching ability sub-scale was .88. The mean rating for the teacher preparation program of land-grant teachers was 74.29 while the mean rating for nonland-grant program was 75.64.

The highest rated item for both types of teachers was "work with FFA" (LG=82.31, NLG=83.73) and the lowest rated item for both groups of teachers was "vocational instruction for adults" (LG=63.2, NLG=61.69). In general, the relative ranking of items for both groups of teachers were similar.

Program Activity

A multi-dimensional formula was developed by the researchers to assign an "activity score" to the vocational agriculture program being conducted by the teacher. The researchers believe a complete program of vocational agriculture will have a FFA component, a SOEP component, and a young/adult farmer component. Accordingly, the formula utilizes information supplied by the teacher about the types and number of activities associated with each component. A total activity score is calculated along with sub-scale scores for FFA, SOEP, and the young/adult farmer component. A total of 42 items (23 on FFA, 13 on SOEP, and 6 on young/adult farmer) are used in calculating the activity score. Each of the 42 items is assigned a weight which should result in a score of 100 on the FFA sub-scale for an active program, a 100 on the SOEP sub-scale for an active program, and a score of 50 on the adult/young farmer component for an active program. Therefore, a total activity score of 250 would indicate an active vocational agriculture program. There is no ceiling score. It is possible to exceed the "norm" score suggested by the researchers. The agricultural education faculty at LSU and a national panel of ten recognized scholars in the field were used to arrive at the items and factors used on the program activity instrument. The items used in arriving at the activity score and the weighting factors are found in Table 2 along with the activity scores for the two groups of teachers.

The mean program activity score for vocational agriculture teachers prepared at land-grant institutions was 179.95 while the nonland-grant prepared teachers had a mean program activity score of 168.83. This difference in scores was not statistically significant $t(143) = 0.69$, $p>.05$.

The FFA activity sub-scale score for land-grant teachers was 79.39 while the nonland-grant teachers had an FFA activity sub-scale score of 75.47. The SOEP sub-scale score was 80.39 for land-grant teachers and 81.84 for non-land grant-teachers. The young/adult farmer sub-scale score was 20.17 for land-grant teachers and 11.52 for nonland-grant teachers.

Table 2

Program Quality Scores for Vocational Agriculture Teachers Prepared at Land-grant and Nonland-grant Institutions

Variable	Weight	Land-grant Teachers (N=43) Mean or Percent	Land-grant Teachers (N=43) Points Awarded	Nonland-grant Teachers (N=102) Mean or Percent	Nonland-grant Teachers (N=102) Points Awarded
FFA COMPONENT					
Percent of students who belong to the FFA	(% x .1)	92.19%	9.22	84.69%	8.47
Number of FFA meetings last year	(N x .5)	9.95	4.98	10.54	5.27
Chapter uses official opening/closing ceremonies	(yes= 3)	95.35%	2.86	89.22%	2.68
Officers recite parts from memory	(yes= 3)	81.40%	2.44	80.39%	2.42
Chapter has a written program of activities	(yes= 3)	93.02%	2.79	87.25%	2.62
Are there guest speakers/formal programs at meetings	(yes= 3)	39.53%	1.19	39.21%	1.18
How many speakers did the chapter have last year	(N x .5)	6.14	3.07	4.95	2.48
Are FFA calendars used to promote the program	(yes= 3)	23.26%	.70	23.53%	.71
The chapter has an annual parent-member banquet	(yes= 4)	95.35%	3.81	90.20%	3.61
The official FFA secretaries book is used	(yes= 3)	83.72%	2.51	72.55%	2.17
The official FFA treasurers book is used	(yes= 3)	72.10%	2.16	68.63%	2.05
Were proficiency awards submitted beyond the chapter	(yes= 3)	51.16%	1.53	57.84%	1.74
How many prof. award applications were submitted	(N x 1)	5.77	5.77	5.75	5.75
How many applications placed third or higher	(N x 1)	4.90	4.90	3.05	3.05
Do committees carry out the program of activites	(yes= 3)	93.35%	2.80	91.18%	2.74
Number of judging teams qualified for state	(N x 1)	3.10	3.10	3.20	3.20
Number of applications for the state degree	(N x 1)	4.15	4.15	3.70	3.70
Number who received the state degree	(N x 1)	3.58	3.58	3.43	3.43
Percent of students participating in local fairs	(% x .1)	39.50%	3.95	47.70%	4.77
Percent of students participating in state fairs	(% x .1)	16.71%	1.67	19.89%	1.99
Number of chapter level proficiency awards awarded	(N x .5)	8.84	4.42	8.45	4.23
Chapter participated in BOAC	(yes= 5)	46.51%	2.33	44.12%	2.21
Chapter participated in Food for America program	(yes= 5)	34.88%	1.74	24.51%	1.23
Chapter planned activities for National FFA week	(yes= 5)	74.42%	3.72	75.49%	3.77
FFA Component Sub-scale Score			**79.39**		**75.47**
SOEP COMPONENT					
Percent of students with one SOEP "project"	(% x .25)	58.17%	14.54	57.23%	14.31
Percent of students with two or more SOEP "projects"	(% x .35)	21.09%	7.38	20.22%	7.08
Percent of students visited once per year	(% x .15)	33.21%	4.98	33.19%	4.98
Percent of students visited twice per year	(% x .3)	30.09%	9.03	25.01%	7.50
Percent of students visited thrice or more per year	(% x .5)	13.03%	6.52	20.02%	10.01
Are students required to keep records on the SOEP	(yes= 4)	93.02%	3.72	88.24%	3.53
Students have class time to update SOEP record books	(yes= 3)	86.05%	2.58	83.33%	2.50
SOEP record books are used in determining grades	(yes= 3)	81.40%	2.44	75.49%	2.26
Percent of class grade SOEP record book determines	(% x .6)	17.50%	10.50	17.42%	10.45
Number of weeks spent in class on SOEP in VA I	(N x 2)	3.44	6.88	3.51	7.02
Number of weeks spent in class on SOEP in VA II	(N x 2)	2.32	4.64	2.26	4.52
Number of weeks spent in class on SOEP in VA III	(N x 2)	1.73	3.46	2.02	4.04
Number of weeks spent in class on SOEP in VA IV	(N x 2)	1.86	3.72	1.82	3.64
SOEP Component Sub-scale Score			**80.39**		**81.84**
YOUNG/ADULT FARMER COMPONENT[a]					
Do you conduct a young and/or adult farmer program	(yes= 2)	41.86%	.84	17.65%	.35
The average enrollment in the young/adult program	(N x .5)	19.39	4.06	31.67	2.79
Number of class meetings per year	(N x 1.2)	8.90	4.47	11.05	2.34
Average attendance per meeting	(N x 1)	13.53	5.66	18.61	3.28
Total number of visits made to enrollees	(N x .4)	19.23	3.22	29.80	2.10
The group is affiliated with the YFA or FFA alumni	(yes=7.5)	25.58%	1.92	8.82%	.66
Young/Adult Farmer Component Sub-scale Score			**20.17**		**11.52**
TOTAL PROGRAM ACTIVITY SCORE			**179.95**		**168.83***

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[a] Less than half of the teachers conducted young/adult farmer programs. The values shown are for those teachers who are conducting programs. In calculating activity points for items two through five in this section the scores were multiplied by the percentage of teachers who conducted programs (Item 1). While the means and percentages first may appear robust, they are for less than half the teachers.

(143) = 0.69, p>.05

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Attitudes

Thirty statements designed to measure the attitudes of vocational agriculture teachers toward the FFA, SOEP, and Young and/or adult farmer components of the vocational agriculture program were on the instrument. Three sub-scale scores plus a total summated score were calculated. The overall attitude score for land-grant teachers was 260.96 (highest possible score was 330). The nonland-grant teachers had a total attitude score of 260.96. The difference in attitude scores was statistically significant $t(143) = 2.06$, $p<.05$. The attitude statements and mean score for each of the items is found in table 3.

The land-grant teachers had a FFA attitude score of 89.03 while the nonland-grant teachers had a score of 86.39 (110 was the highest possible). The summated attitude score of the land-grant teachers toward the SOEP was 96.28 while the nonland-grant teachers had a score of 93.83 (110 highest possible). The summated attitude score toward adult/young farmer programs was 75.65 for land-grant teachers and 62.21 for nonland-grant teachers (110 highest possible).

Conclusions

There was no difference in the teaching ability of vocational agriculture teachers prepared at land-grant and nonland-grant universities. Both groups of teachers were perceived by their principals as being above average in subject matter knowledge and teaching skills.

Overall, there was no difference between land-grant prepared teachers and nonland-grant prepared teachers in activeness of the FFA or SOE program. While no statistical analysis was conducted, it appears that land-grant teachers are more active in adult and/or young farmer programs than nonland-grant teachers. Less than 20 percent of the nonland-grant teachers conducted adult programs while more the 40 percent of the land-grant teachers conducted adult programs.

Teachers prepared at land-grant universities had a more favorable attitude than teachers prepared at nonland-grant universities toward the components of a complete vocational agriculture program. Both groups of teachers had somewhat similar attitudes concerning the FFA and SOEP but a major difference appears to be in attitude toward the young farmer/adult programs. While the land-grant teachers did not have as strong an attitude toward young and/or adult farmers as they did about the FFA and SOEP the nonland-grant teachers had a particularly soft attitude toward the adult and/or young farmer program.

Table 3

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Attitudes of Vocational Agriculture Teachers Prepared at Land-grant and Nonland-grant Institutions Toward Selected Program Components

Attitude Statement	Mean Rating Land-grant (N=43)	 Nonland-grant (N=102)
FFA COMPONENT		
#There is too much emphasis on the FFA	5.60	5.44
#Classroom instruction suffers because of over emphasis on FFA contests and competition	6.86	6.43
FFA is a motivational tool for students	9.88	9.92
FFA activities are challenging for students	9.95	9.93
FFA is an integral part of vocational agriculture	10.26	10.05
#FFA should involve only students who want to participate	5.53	4.62
FFA develops leadership	10.28	10.31
#FFA is time consuming and should not be included in vocational agriculture	10.44	10.16
FFA is essential to make vocational agriculture attuned to the 1980s	10.07	9.70
FFA develops citizenship and patriotism	10.16	9.83
FFA attitude sub-score	**89.03**	**86.39**
SOEP COMPONENT		
#SOE programs are no longer a viable part of vocational agriculture	10.26	9.48
#Computers can now simulate SOE programs thereby eliminating their use	10.07	9.32
#The elimination of SOEPs would make vocational agriculture more attuned to the 1980s	10.29	10.23
All students enrolled in vocational agriculture should have SOE programs	8.72	9.30
#Too much emphasis is placed on SOEPs	8.74	8.46
SOEPs are integral to the classroom instruction	9.33	8.89
SOEPs help the vocational agriculture teacher to be knowledgeable of the community	9.53	9.27
Vocational agriculture students can use the SOEP experience in the classroom	9.86	9.51
SOE programs are good public relations tools	9.74	9.51
#SOE programs are time consuming and should not be a part of the program	9.74	9.86
SOEP attitude sub-score	**96.28**	**93.83**
YOUNG/ADULT FARMER COMPONENT		
#There is too much emphasis on adult/young farmer programs	7.64	7.93
#Adult and/or young farmer education is not important in vocational agriculture	9.17	8.21
Adult/young farmer programs promote good school-community relations	9.48	8.92
There is not enough emphasis on adult/young farmer programs	5.78	6.37
#Adult/young farmer programs should be primarily conducted by extension personnel	4.62	5.30
Adult/young farmer programs should be a part of the total program of voc. agriculture	8.43	6.95
Vocational agriculture teachers should conduct young/adult farmer programs	7.71	6.58
Adult and/or young farmer programs are essential for vocational agriculture to meet the challenge of the 80s	8.71	7.62
#Adult and/or young farmer programs are time consuming and should be provided by special adult teachers only	7.31	6.73
#Adult and/or young farmer programs should be conducted only at the post-secondary level	6.80	6.67
Young/adult farmer attitude sub-score	**75.65**	**62.21**
OVERALL ATTITUDE SCORE	**260.96**	**242.43**[*]

NOTE. The rating scale was 1 = strongly disagree, 6 = undecided, 11 = strongly agree

Items with this symbol are negative and the scoring was reversed. The higher the score, the more positive the attitude.

[*] t(143) = 2.06, p<.05

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Recommendations

One plausible solution to the teacher shortage may be to increase the number of universities which prepare vocational agriculture teachers. Since there was no difference in the teaching ability or subject matter knowledge of the two groups of teachers it appears nonland-grant universities which have agriculture and education but no vocational agriculture teacher training could prepare teachers.

Both groups of teachers were not as active or as favorable toward adult and/or young farmer education as they were toward other aspects of the program. This was particularly true of nonland-grant prepared teachers. If young and/or adult farmer programs are important in vocational agriculture then both types of universities may need to strengthen this area, especially nonland-grant universities.

An alternate recommendation to the previous recommendation would be to issue a call to the profession to carefully examine the place of adult/young farmer education in the vocational agriculture program. Is it something the profession should push or should it be abandoned?

Since merit pay, teacher career ladders, and other forms of teacher accountabilty and evaluation appear to be on the horizon, the profession may want to take a proactive stance and prepare for the future. The concept of an "Activity Instrument" to assess the FFA, SOEP, and adult/young farmer program as discussed in this paper needs to be further examined. Existing methods of evaluating teachers based soley upon classroom performance does not accurately assess the multiple roles of the vocational agriculture teacher. Instruments which are valid, reliable, not subject to bias, and which can easily be administered are needed to evaluate vocational agriculture teachers. Norm scores need to be established. The researchers will be the first to admit the activity instrument used in this research is not perfect but could provide a starting place for further refinement and development. The profession needs to develop its own model for evaluation before someone else does it for us.

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TECHNICAL ANIMAL SCIENCE SKILLS TAUGHT IN VOCATIONAL AGRICULTURE CLASSES AND POSSESSED BY ILLINOIS AGRICULTURAL PRODUCTION TEACHERS

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INTRODUCTION

Few in the field of agricultural education would disagree that both knowledge and skill development in technical agriculture is essential for those who plan to teach vocational agriculture. Herren (1983) stated that the main objective of a quality teacher preparation program is to produce graduates who know how to teach and possess technical knowledge and skills in agriculture. However, the task of developing technical skills in prospective teachers has largely been left to the various departments within the colleges of agriculture. Some believe that college courses in technical agriculture tend to be mostly theoretical, emphasizing principles related to specific areas of agriculture while giving little opportunity for students to practice and develop technical skills (Warmbrod, 1979).

If vocational agriculture teachers are to teach essential technical animal science skills to their students, they must have confidence in their own ability to perform these skills. Recent research has shown that additional training in areas of technical animal science may be needed by both prospective vocational agriculture teachers and those who are currently involved in teaching vocational agriculture (Anochili, 1982; Fard-Sarhangi, 1982). Many agricultural educators would agree that often vocational agriculture teachers have failed to carry instruction in technical skills to the "doing level" because they have never performed these skills themselves and therefore lack the confidence necessary to teach at the skill development level (Binkley and Tullock, 1981). Unless teachers incorporate demonstrations and student practice into their teaching methods, students only learn about technical skills in animal science, rather than how to perform essential technical animal science skills.

OBJECTIVES

The purpose of this study was to determine the technical animal science skills possessed by current agricultural production teachers in Illinois and the extent to which these animal science skills were taught in high school vocational agriculture classes.

The objectives of this study were stated as research questions as follows:

1. What was the self-reported performance level of current Illinois agricultural production teachers with respect to essential technical animal science skills?
2. Where did the teachers report that they acquired their present level of skill?
3. How confident were the teachers in their ability to perform and to demonstrate these skills?
4. To what extent did Illinois teachers report that they taught these skills during the immediate past year in their high school vocational agriculture classes, and what teaching methods were reportedly used?
5. What was the relationship between performance levels reported by Illinois teachers and (1) confidence level and (2) demographic variables?

The results of this study could lead to improvement of both the agricultural teacher education programs in Illinois and in the inservice programs for Illinois agricultural production teachers. The major outcomes of this study included the documentation of the technical animal science skills of Illinois agricultural production teachers, where these skills were developed, and the extent and methods used to teach these essential animal science skills.

The results of this study could be used to determine inservice needs of agricultural production teachers in both developing additional animal science skills and in methods of teaching those skills to their students. In addition, the results of this study may be used to evaluate the technical agriculture courses included in the teacher preparation program.

METHODS

The research design utilized by this study was descriptive survey. The target population involved in this study consisted of all Illinois agricultural production teachers employed during the 1983-84 school year. The 1983-84 Annual Directory of the Illinois Association of Vocational Agriculture Teachers served as the frame for the population. Teachers identified as horticulture or agricultural mechanics teachers were not included in the population, giving a total population of only agricultural production teachers (N=384).

The methodology, which followed closely a similar study conducted by Osborne (1982) involving Ohio agricultural production teachers, controlled potential errors of measurement, frame, sampling, and nonresponse. The essential technical animal science skills needed for dairy, beef, sheep and swine production were identified by Osborne (1982). This list of skills was reviewed by members of the University of Illinois College of Agriculture faculty (one specialist for each livestock species). Additional essential skills were recommended for each type of livestock and were added to the instrument. A total of 61 technical animal science skills, involving only those skills performed on the live animal, was identified as having content validity. The instrument included 9 dairy, 18 beef cattle, 19 sheep, and 15 swine skills (see Appendix A).

The revised instrument was pilot tested for clarity and reliability using ten members of the population not included in the sample. Internal consistency of the confidence levels reported by the teachers was used to determine the reliability of the instrument. Cronbach's Alpha was calculated to be r=.96, indicating a high level of reliability of the instrument.

Appropriate sample size was determined by using a formula which took into account the type of scale used, the desired level of accuracy, and the desired level of confidence in the results (Elliott, 1980). The appropriate sample size was calculated to be one hundred. Therefore, a random sample of 100 agricultural production teachers was selected from the population to participate in this study.

A mail questionnaire was used to collect data. The initial mailing consisted of the questionnaire and a cover letter which explained the purpose and importance of the study. The initial mailing was followed up by a postcard reminder and a follow-up letter containing a replacement questionnaire. This procedure resulted in the return of seventy-six questionnaires, with two questionnaires unusable due to insufficient completion. Therefore, the data sample consisted of 74 questionnaires, or 74 percent of the sample.

After completion of the data collection, a letter and replacement questionnaire were mailed to all nonrespondents for the purpose of determining if significant differences existed between respondents and nonrespondent groups. Six questionnaires (25 percent) were returned. No significant differences between the groups were found based upon t-tests and examination of the demographic data. Therefore, results could be generalized to the target population of this study.

The data were analyzed by means of the Statistical Package for the Social Sciences available through the Computer Services Laboratory at the University of Illinois. Descriptive statistics such as frequences, percentages, measures of central tendency, measures of variance, and measures of association (correlation) were the primary statistics used.

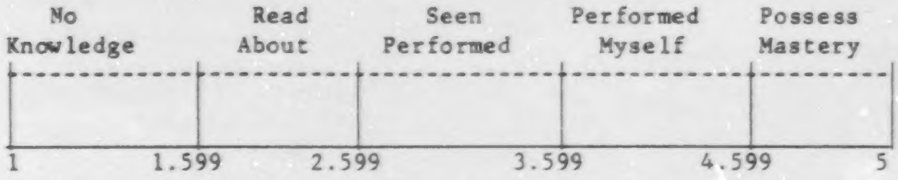
RESULTS AND CONCLUSIONS

Characteristics of Agricultural Production Teachers

The number of years of agriculture teaching experience of the sample ranged from one to 35 years. Approximately 50 percent of the teachers had taught ten years or less, and the average teacher had taught about 12 years. Only 12 percent of the teachers supervised a school livestock farm. Over 82 percent had grown up on a livestock farm, and almost 42 percent reported that they were currently involved in livestock production. The teachers in the sample had completed an average of three years of high school vocational agriculture.

Animal Science Skills Performance Levels Reported by Teachers

Teachers were given a range of five performance levels and were asked to circle their highest level of performance for each skill. The scale included (1) no knowledge, (2) read about, (3) seen performed, (4) performed myself, and (5) possess mastery. The resulting mean performance levels were interpreted according to the following scale:



For the 61 skills the mean performance level ranged from a low of 1.871 to the highest performance level of 4.176. Sixty-nine percent of the mean performance levels for the skills were below 3.600, indicating that a large majority of the teachers had seen the skill performed, but had never actually performed the skill themselves.

The agricultural production teachers reported the highest mean performance level for the fifteen swine skills ($\bar{x}$ = 3.686) and the lowest for the nine dairy skills ($\bar{x}$ = 2.663) (see Table 1). The overall mean performance level for the 61 animal science skills was 3.187, which was within the "seen performed" range.

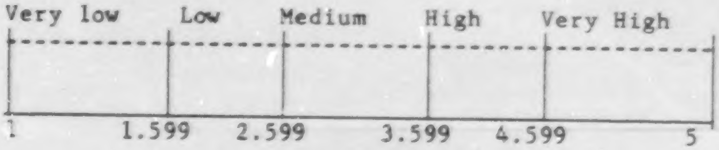
Table 1

Mean Animal Science Skills Performance Levels of Illinois Agricultural Production Teachers

Livestock Species	$\bar{x}$	SD
1. swine	3.686	.968
2. beef cattle	3.442	.976
3. sheep	2.946	1.230
4. dairy cattle	2.663	1.276
5. overall	3.187	1.087

Animal Science Skills Confidence Levels Reported by Teachers

For each of the 61 animal science skills, teachers were asked to report their level of confidence in their ability to demonstrate the skill. The scale ranged from (1) very low to (5) very high. The resulting mean confidence levels were interpreted using the following scale:



Forty-nine percent of the reported confidence levels were in the medium range. No mean confidence levels were reported as very high, while 26 percent were reported high and 25 percent of the confidence levels were reported low.

The highest mean confidence level reported by the teachers was found in the swine skills ($\bar{x}$ = 3.561), and the lowest confidence levels were in dairy skills ($\bar{x}$ = 2.437) (see Table 2). The average level of confidence reported for all 61 animal science skills was 3.080, or medium. These results followed very closely the results of the reported performance levels of the teachers.

Table 2

Mean Animal Science Skills Confidence Levels of Illinois Agricultural Production Teachers

Livestock Species	$\bar{x}$	SD
1. swine	3.561	1.121
2. beef cattle	3.225	1.115
3. sheep	2.771	1.222
4. dairy cattle	2.437	1.288
5. overall	3.080	1.170

The teachers were asked to identify at which of five major settings they developed their present level of skill. The categories included (1) high school vocational agriculture instruction, (2) farm work experience during high school, (3) college course, (4) farm work experience during college, and (5) while teaching agriculture.

The major source reported by teachers for acquiring skills in dairy, beef cattle, and swine was farm work experience during high school. While teaching agriculture was the second most cited source, followed by college course. However, for the sheep skills while teaching agriculture was the most often reported source of skill development, with college course second and farm work experience during high school third. High school vocational agriculture and farm work experience during college were reported least often by agricultural production teachers as their major source of skill development, for all species of livestock.

Teachers who reported that they had performed the skill or possessed mastery were selected in an effort to determine their major source of skill acquisition. Overall, an average of 44 percent who reported that they had performed the skills or possessed mastery cited the farm work experience during high school as the major source of skill acquisition. Twenty-five percent had developed their present level of skill performance while teaching agriculture. The only significant variation among species of livestock occurred within the sheep production skills, where almost 20 percent of the agricultural production teachers reported that their major source of skill development was college courses.

Teaching Methods Used for Animal Science Skills

The frequency of teaching technical animal science skills varied considerably among the species of livestock. An average of over 77 percent of the teachers reported that they did not teach the dairy skills identified as essential to dairy production, while only 31 percent did not teach the skills essential to swine production. For the 61 skills, about 50 percent of the teachers reported that they did not teach the specific skill. An average of one-third taught the skills by using the discussion method, six percent used demonstrations on live animals, and only five percent provided for student practice on the live animal.

Relationship of Performance Level to Confidence Level and Demographic Factors

Teachers who reported higher performance levels for skills within each livestock species tended to report higher confidence levels in their ability to demonstrate the skill (see Table 3). Higher performance levels were also related to teachers using teaching methods that involved demonstrations on live animals and student practice. Those who reported higher performance levels also tended to teach the skills more frequently. Performance level was only slightly related to years of teaching experience. Teachers who currently were involved in livestock production tended to report higher animal science skill performance levels.

Table 3

Pearson Correlation of Animal Science Skills Performance Levels by Factors Possessed by Agricultural Production Teachers

Factor	r
confidence level	.87***
teaching method used	.30**
current involvement in livestock production	.27**
frequency of use in teaching	.23*
years of teaching experience	.19
farm background	.11
supervision of school livestock farm	.04
years of high school vo-ag	-.04

*$p < .05$
**$p < .01$
***$p < .001$

Conclusions

Based upon the findings of this study, the following conclusions were drawn:

1. While many teachers develop skills in animal science after entering the teaching profession, farm work experience during high school is the major setting for developing skills in technical animal science. College courses in animal science do not usually provide the student with an opportunity to perform the essential skills that they should teach to high school students.

2. A majority of Illinois agricultural production teachers have not actually performed the skills identified essential to livestock production, but only have seen the skills performed

3. Teachers who have actually performed the skills have more confidence in their ability to demonstrate the skill to their students. This higher level of confidence is reflected in more skills being taught and increased use of demonstrations and student practice on live animals.

4. A large majority of Illinois agricultural production teachers who teach specific technical skills in animal science use the discussion method to teach about the skill rather than using methods that provide for demonstrations and student practice on live animals.

5. Illinois agricultural production teachers who are involved in livestock production on a part time basis have an opportunity to upgrade their performance level of technical skills in animal science.

RECOMMENDATIONS

Based upon the findings and conclusions of this study, the following recommendations for practice are offered:

1. College courses in animal science for students in teacher preparation programs should provide more hands-on experience in technical skills performed on live animals.
2. Inservice opportunities involving workshops, short-courses, or summer semester courses should be provided agricultural production teachers in an effort to upgrade their performance levels in technical animal science skills.
3. Agricultural production teachers should be encouraged to utilize resources such as school, land laboratories, field trips, and other community resources in an effort to provide more experiences involving the use of live animals (in demonstrations and student practice) when teaching technical animal science skills.
4. The list of animal science skills validated in this study should be used by agricultural production teachers as a checklist for evaluating and updating their technical skills.

The findings of this study also provide the following recommendations for further research:

1. A study of similar purpose and design should be conducted in the area of crop production. Many of the technical skills in crop production may involve the operation and adjustment of field machinery. As a result, technical skills in animal science and crop production would be identified and the experience of teachers in performing and teaching those skills would be documented.
2. A study should be conducted involving teachers employed in specific areas in which livestock production is of major importance to determine what technical animal science skills are taught and what teaching methods used. The teacher preparation program and the technical animal science background of these teachers should also be investigated.
3. Similar studies in states in other geographic regions in which livestock production is of major importance should be conducted in order to increase the generalizability of the findings of this study.

4. Periodic efforts should be made to update and revalidate the list of essential technical animal science skills identified in this study. The list should be updated every five years in order to assure that the skills included continue to be of importance to the producer.

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APPENDIX A

Essential Skills in Animal Science

Dairy

1. treat calves for scours
2. draw milk samples
3. dry treat cows
4. install heat detectors
5. administer Calif. mastitis test
6. treat for mastitis
7. use proper milking techniques
8. fit and show dairy
9. perform ketosis test

Beef

1. treat for internal parasites
2. treat for external parasites
3. trim hooves
4. ear tag
5. tattoo
6. brand
7. treat navel cord
8. treat for bloat
9. check temperature
10. assist in calving
11. vaccinate
12. dehorn
13. castrate
14. artificially inseminate
15. pregnancy test
16. implant growth stimulant
17. fit and show beef
18. measure scrotal circumference

Sheep

1. trim feet
2. treat for foot rot
3. ear tag
4. check temperature
5. treat navel cord
6. vaccinate
7. castrate
8. dock lambs
9. assist in lambing
10. shear
11. tag and/or crutch ewes
12. treat for internal parasites by drenching
13. treat for internal parasites with boluses
14. treat for external parasites by dipping
15. fit and show
16. implant growth stimulants
17. pregnancy test
18. measure scrotal circumference
19. mouth to determine age

Swine

1. ear notch pigs
2. ear tag
3. clip tails
4. clip needle teeth
5. de-tusk boars
6. ring
7. castrate
8. give injections
9. artificially inseminate
10. probe backfat
11. treat for internal parasites
12. treat for external parasites
13. fit and show
14. pregnancy test (ultrasound)
15. assist with farrowing

AGRICULTURE AND HORTICULTURE IN THE SECONDARY SCHOOLS OF THE SOUTHERN EDUCATION REGION OF NEW ZEALAND*

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INTRODUCTION

The national uniformity of the teaching of agricultural education in the United States of America due to common national legislation makes it important to look to other countries for different ideas. Comparative educational research has the capability of improvement of agricultural education in the country being studied and the home country of the researcher. A 1984 study of the British System of secondary agriculture education in New Zealand is the subject of this report.

OBJECTIVES OF THE STUDY

The objectives of the study were to ascertain the status of teacher preparation, school facilities, teaching resources, students served and teaching practices, including the use of practical work and projects.

METHODS AND PROCEDURES

All secondary schools that offered agriculture or horticulture in the Southern Education Region of New Zealand were included in the study. This region, one of three regions, included all the South Island of New Zealand except about twelve high schools in the northern part. Thirty-three high schools out of 107 were teaching agriculture and/or horticulture in the Southern Education Region. In these 33 schools, 50 teachers were teaching agriculture and/or horticulture. There were 20 programs in agriculture and 20 programs in horticulture.

Personal interviews with 48 of 50 teachers of agriculture and/or horticulture in 33 schools were made during March and April of 1984. Tours of facilities and other observations were made at the schools when the teachers were interviewed, using a structured interview form.

The analysis was one of describing and comparing various groupings of teachers, students, teaching procedures and facilities.

RESULTS

The content of the study was grouped under four sections: the Teachers, Facilities and Resources, the Students, and Teaching.

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*Paper presented at the Southern Research Conference in Agricultural Education, Mobile, Alabama, March 1985.

The Teachers

The preparation and in-service activities of the teachers were varied. Twenty teachers (42 percent) had degrees in agriculture or horticulture. Eight of the 48 teachers had not attended a teachers' college. Seventeen teachers (7 agriculture and 10 horticulture) had no formal preparation or any work experience in agriculture or horticulture. This group of 17 teachers comprised 35 percent of the teachers and were teaching 20 percent (612) of 3,029 students. Primarily these less than adequately prepared teachers were in the schools having newer programs and lower enrollments.

Eight schools had offered agriculture or horticulture for ten years or longer, and they enrolled 1,636 (54 percent) of the students. Seven out of eight of these schools had a teacher prepared through an agriculture or horticulture degree. Further evidence that the prepared teachers were teaching most of the students was that 70 percent of the students were in schools having a teacher with a degree in agriculture or horticulture. Teachers in the newest programs tended to be teachers of another subject who were already employed in the school.

The in-service needs and desires of horticulture teachers were different from those of agriculture teachers. Horticulture teachers were interested in learning skills such as pruning, grafting and budding as well as how to organize laboratory facilities (plots, greenhouses, etc.) and coordinate their use with each group of students. The agriculture teachers were most interested in teaching material and subject matter and how to relate them to the new syllabus.

Teachers outside of the Christchurch area seldom saw other teachers of their subject, and some means of exchanging ideas with fellow teachers was needed. Almost every school was using one good idea that most other schools were not using. A conference for all teachers was needed.

The amount of in-service education for agriculture and horticulture teachers was measured by days of it during the previous three years. After excluding the teachers who had not taught a full year and adjusting the amount of those who had taught less than three years, there was little difference by years of teaching, sex, or whether teachers taught agriculture or horticulture. However, the degree holders in agriculture or horticulture had nearly twice as much in-service work (5 days) as those without a degree (2.6 days) in agriculture or horticulture.

An average of 60 agriculture or horticulture students were being taught per teacher during a school year. Teachers who taught no subjects other than agriculture or horticulture had about 100 students each.

Eighteen schools had one teacher of agriculture or horticulture, and the other schools had more than one teacher. Four of the 15 schools had three teachers involved in teaching agriculture or horticulture. Six schools had more teachers than needed involved in teaching agriculture or horticulture for reasons which could only be explained by preference and benefit to the teacher and perhaps the principal, but not the students. Fourteen teachers in these six schools, only one of whom had an agriculture degree, were teaching 433 students (31 students each).

BEST COPY AVAILABLE

Spreading the teaching load among several unprepared teachers appeared to make it difficult for any of the teachers to ever become well prepared. Organized in-service education would be difficult to provide to several teachers from one school. These teachers would have to split in-service time with biology, geography or other subject matter area.

Both men and women taught agriculture and horticulture. Thirteen of 48 (27 percent) teachers were women. Five women taught agriculture and eight women taught horticulture. No single-sex schools had opposite sex teachers of agriculture or horticulture.

Facilities and Resources

Ten schools out of 33 had separate, specialized classrooms. Thirteen had adequate access to science laboratories, and in ten schools teachers shifted around from room to room. Problems listed by teachers using specialized classrooms were: 1) lack of water in two classrooms, 2) lack of hot water in two classrooms, 3) lack of space in three classrooms, 4) lack of blackout curtains in two classrooms, 5) lack of a gas bench in one classroom, and 6) sinks and audio-visual equipment were listed as being needed in another classroom.

An overhead projector was available in the rooms used for agriculture or horticulture in 24 of 33 schools. The usual audio-visual equipment was available in every school. Every school visited had at least one micro-computer. One school had 23 micro-computers. No agriculture or horticulture teacher was making use of computers for instruction.

Seven schools out of 20 offering agriculture courses had animals. Sheep was the most common type of animal. One school had cattle, one had rabbits and one had chickens. At two schools the teacher brought his own sheep to school for short periods of time. Only two schools had extensive farms.

Land being used by most schools was part of the school grounds; however, several arrangements were being made to get access to land.

All schools teaching horticulture (20) had or were getting glass or plastic houses. The glass or plastic houses were small in many cases. Space under glass or plastic was as little as one square foot per student enrolled to as much as 33 square feet per student enrolled in horticulture. The newest greenhouses being built provided two-thirds to one square yard of space under glass or plastic for each student enrolled. All schools offering horticulture had garden plots even though the inner city schools were limited in space. All schools had a good supply of hand tools. Power equipment for horticulture was almost non-existent.

Horticultural crops were mainly vegetables. Most schools had some fruit trees. Only six of twenty schools were growing flowers. No schools were propagating woody plants.

Students

Over 3,000 students were enrolled in agriculture or horticulture in the 33 schools studied. Agriculture enrollment was 1,880 and horticulture enrollment was 1,149. Seventy-two percent of the enrollment was in Form 3 or 4 (age 13 and 14). Twenty-four percent of the enrollment was in Form 5. Ten schools taught Form 6 agriculture or horticulture, but Form 6 enrollment constituted only four percent of the total. Agriculture or horticulture reached one student out of eight in the 33 schools. The 33 schools were less than one-third of those in the region.

Excepting the four single-sex schools, only one classroom group in the 33 schools did not contain both boys and girls. Thirty-one percent of the overall enrollment was girls (897 out of 3,029). Horticulture enrollment was 38 percent girls, and agriculture enrollment was 27 percent girls. The percent of girls in agriculture gradually decreased beyond Form 3. The percent of girls in horticulture increased beyond Form 3 and 4. The number of boys' high schools and girls' high schools offering horticulture was equal at two each.

When asked to describe the academic ability level of Form 5 students using high, medium and low, the teachers in six out of 33 schools des- the students as being above medium ability. The most common answer was, "I have a few high ability students, but I have several at the lower end of the ability level."

An estimate by teachers of the percent of parents of students who were employed full time in agriculture as broadly defined was 38 percent. Thirty-eight percent was also the estimate of all students who would eventually become employed in agriculture as broadly defined. Forty-five percent of students in schools offering both agriculture and horticulture were expected by their teachers to be employed eventually in agriculture as broadly defined.

An organized course for adults was conducted in three schools. Three other schools had adults mixed in with day-school students. Four teachers were closely associated with Young Farmer Clubs.

Teaching

The words "vocationally relevant" and "leading to jobs" were used in determining how teachers felt concerning their objectives in teaching agriculture and horticulture. In New Zealand vocational education is primarily the responsibility of the polytechnic schools and community colleges (both tertiary level); however, teachers and students generally saw the secondary program as having relevance to employment in agriculture and horticulture. Using high (3), medium (2) and low (1) to describe vocational relevance, the teachers indicated a relevance about midway (2.4) between medium and high. Only two teachers chose low (1) to describe the vocational relevance of courses.

Teachers thought that students expected what they studied in agriculture and horticulture to lead to jobs. Teachers thought that students expected the course to be more job oriented than the teachers did.

Teachers were asked to rank the following objectives according to the degree of emphasis in their teaching: 1) discovery of scientific principles, 2) performing skills, 3) management practices and 4) attitudes. Emphasis on the objectives varied with the age of the student being taught, but the teachers were asked to give one overall answer. Also, there was only one answer per school even though both horticulture and agriculture were taught.

The average rank for all schools placed the attitude objective at a distant bottom and the other three objectives in a nearly tied position. When schools teaching only horticulture or both horticulture and agriculture were separated from the others, the performance-of-skills objective was ranked highest. Even when using only the schools teaching school certificate horticulture, performance of skills was strongly in first place. In schools that taught only agriculture and the ones that taught school certificate agriculture performance of skills was ranked even lower than the attitude objective. The teaching of attitudes moved to its highest rank (second out of the four objectives) in a grouping of schools that had no Form 5 (school certificate program) in either agriculture or horticulture.

In summary, performance of skills ranked highest in horticulture regardless of whether a school certificate course was taught. Scientific principles ranked highest in agriculture perhaps because of the school certificate emphasis. A heavy emphasis on subject matter and little emphasis on the person learning the subject matter revealed itself in answers about objectives in teaching and in general discussion with the teachers.

Teachers were asked to give the amount of time spent in practical work. The choices were 0-10, 11-20, 21-30, 31-50, and over 50 percent. None of the thirteen horticulture-only schools spent less than 31 percent of the time on practical work. Among the thirteen agriculture-only schools, nine schools spent less than 31 percent of the time on practical work. Much more time was spent in practical work in horticulture than in agriculture. Horticulture programs had facilities for practical work and skills training. Agriculture programs on the average were limited in school facilities for outdoor practical work.

Work experience in agriculture and horticulture was not arranged on a systematic basis in very many schools. Arrangements for work experience with teacher involvement took place in only five schools. The usual answer was, "we have a person in guidance that does that kind of thing."

Six schools had students with ownership projects at home. Five of these schools provided supervision of the projects. Two of the five schools had a travel budget for the teacher to visit home projects.

Although seven schools had animals and several horticulture schools produced considerable products, only two schools used budgeting for these enterprises as a classroom activity. Four schools maintained financial records. Financial skills such as budgeting, record keeping and analysis, and other skills needed by self-employed persons seemed to receive little or not emphasis.

Youth club activity was missing in most schools. The two Catholic schools had separate clubs patterned after the Young Farmer Clubs. Two other teachers, both at boarding schools, coordinated efforts with Young Farmer Clubs sufficiently to see that some students gained experience in clubs.

Two horticulture programs had clubs for students, and one agriculture school had a club which was not related to Young Farmer Clubs.

RECOMMENDATIONS

Recommendations were made when a practice or standard used in the USA was lacking but was felt to be appropriate for New Zealand by the researcher.

Recommendations were:

1. That more strict standards be used for who may teach agriculture or horticulture in the seconday schools.
2. That conferences for teachers from a broad geographic area be held and that workshop activities be included.
3. That teaching loads not be unduly fragmented.
4. That any school having 100 students or a full load taught by one teacher form a department separate from the biology department with a teacher reporting directly to the principal.
5. That no greenhouses be built having less than 50 square yards area andthat it be placed where an extension is possible.
6. That teachers make frequent contact with related business and industry and make their teaching more relevant to it.
7. That practical experience be provided to all students under the direct or indirect supervision of the teacher.
8. That the school certificate examination dominate less what is taught and the needs of the community and students dominate more.

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A DISCUSSION OF RESEARCH REPORTS*

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Report I

ON RESEARCH METHODOLOGY: THE CASSETTE TAPE AS A DATA COLLECTION MEDIUM

Strengths

1. The researchers are to be commended for this inquiry into the relative merits of data collection via the cassette tape. We should encourage efforts like this which are non-traditional and which offer new possibilities and challenges.

2. I like the introduction section of the paper. It includes an adequate review of relevant literature and leads into a clear statement of the problem.

3. For the most part, the conclusions can be supported by the findings, and recommendations for the use of the cassette tape for collecting data are presented, based on the experiences of the researchers.

Concerns/Suggestions for Improvement

1. Most of my concern is in the area of research design. It appears almost as if the idea for this inquiry into the merits of using the cassette tape for data collection was an after thought of the researchers, rather than a part of the design of the original research study on problems encountered by persons involved in international agricultural development.

   The one question asked of respondents related to the use of the cassette tape was "Would you have preferred providing this information using some other method? Please be specific." Yet, the authors proceed to categorize the responses into a number of categories - time, volume of information, free-disclosure, efficiency, etc. If this degree of specificity was wanted, and if an assessment of the merits and problems associated with using the cassette tape for data collection was a part of the research design, I would expect to see specific items in the instrument designed to secure such data.

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*A discussion paper presented at the Thirty Fourth Annual Research Conference in Agricultural Education, Mobile, Alabama, March 23-25, 1985.

2. In reporting the results, the researchers used this terminology: "Most of the respondents," "a few respondents," "some of the respondents," "several respondents," "many respondents" and "a number of respondents." These statements are difficult to interpret. Why not simply report the actual numbers?

3. One last concern relates to over-stating conclusions and/or recommendations. The researchers concluded: "...the cassette tape has great potential as a data collection medium in research especially when highly qualitative data are needed." Can this statement be supported by the data? I don't think so.

   Also, the paper states: "...the findings seem to strongly suggest that the cassette tape is a viable alternative in data collection under certain circumstances dictated by the nature of the data of interest." While this statement does have a qualifier, I would still question whether it can be supported by the data.

Report II

TECHNICAL ANIMAL SCIENCE SKILLS TAUGHT IN VOCATIONAL AGRICULTURE CLASSES AND POSSESSED BY ILLINOIS AGRICULTURAL PRODUCTION TEACHERS

Strengths

1. The researchers are to be complimented for a well-organized and well-written document.
2. The research design was clearly formulated and appropriate for the study.
3. A good case was developed for the need for the study.
4. It is good to see research being conducted that builds on research previously conducted in another state.
5. The research questions were clear and appropriate and the findings reported appropriately addressed each question.
6. The research methodology was appropriate and was clearly described. Careful attention was given to controlling potential errors of measurement, frame, sampling, and non-response.
7. The conclusions were clearly stated and substantiated by the findings.
8. Appropriate recommendations were made, both for practice and for further research.
9. In short, this research effort has many exemplary features and can serve as a good model for similar types of studies.

Report III

AGRICULTURE AND HORTICULTURE IN THE SECONDARY SCHOOLS OF THE SOUTHERN REGION OF NEW ZEALAND

Strengths

1. The biggest strength of this study, in my opinion, is the depth and breath of information collected during the interview process. A wealth of information was gathered and the researcher is to be commended for using the personal interview process to gather data.
2. The paper is well-organized and well-written.
3. Some very logical recommendations are made based upon the findings. I assume that these have been forwarded to the appropriate persons for review.

Concern/Suggestions for Improvement

1. I would like to see the introduction expanded to set the stage for the study. It was not clear to me exactly why this study was conducted. Was it requested by education officials in New Zealand? Were there specific problems that prompted this study?
2. Some description of the context of education in New Zealand would be helpful to the reader in understanding the study. Why was the Southern Education Region selected for the study?
3. An explanation is in order as to how the interview form was developed. What about its validity? Who did the interviewing?
4. There were no conclusions presented based upon the findings of the study.
5. In the introduction, the researcher stated that "Comparative educational research has the capability of improvement of agricultural education in the country being studied and the home country of the researcher." Yet, all the recommendations had to do with improving the education program in New Zealand. What was learned that would be beneficial to Agricultural Education in the U.S.?

Concerns/Suggestions/Questions, Additional Implications

1. Even though the initial list of skills were identified in a previous study in Ohio (i.e. the researchers weren't starting from scratch), it would be helpful if a brief summary was provided of how the list was developed. Also, did the researchers consider replicating the entire Ohio study, including the development of the list of skills in Illinois?

2. While additional skills were recommended by the review committee, no mention was made of any deletions. Were they asked to delete items, if appropriate? It was not clear as to how many items were added, nor exactly how that process occurred, i.e. did a certain number of the review committee have to agree before an item was added or did you simply take the word of the one livestock specialist? Is this adequate?

   I also wondered if a State core curriculum or basic curriculum exists for Vocational Agriculture in Illinois, and if so, why was it not used in this process?

3. I was quite surprised that 82% of the teachers reported having grown up on a livestock farm, and 42% were currently involved in livestock production. That being the case, I would have expected the skill level to be higher than that reported.

4. Is there a reasonable explanation for the difference in skill level by species? Example: Swine, 3.68; Dairy, 2.66.

5. You mentioned the percentage of teachers who reported that they did not teach dairy skills (77%) or swine skills (31%), but did not mention the percentage who did not teach beef cattle and sheep skills.

6. One discouraging finding was the low number of teachers using demonstrations on live animals(6%) and providing opportunity for student practice (5%). This is a sad situation, in my opinion, and needs further study. This is a long shot from "learning by doing, doing by learning."

7. Did the researchers consider looking at other variables, such as the number of hours of course-work in Animal Science and number of workshops or short courses attended in Animal Science?

8. Does the fact that the teachers who were currently involved in livestock production were the ones who reported the highest skill levels suggest that we ought to be encouraging our teachers to be part-time farmers? (A good topic for additional study.)

SUMMARY REMARKS AND CHALLENGES

David Williams
Iowa State University

VII

SUMMARY REMARKS AND CHALLENGES

by

David L. Williams

Iowa State University

The following are my reflections and observations while listening to 31 paper presentors, paper reactors and speakers at this research conference:

1. The future of the agricultural education profession depends on the relevance and quality of its research.
2. The profession of agricultural education needs a national research agenda.
3. Research results must be communicated to local, state and national agricultural education decision makers.
4. The agricultural education profession should become more proactive and less reactive in designing research.
5. Vocational agriculture curriculum guides should include both "what to teach" and "how to teach".
6. Vocational agriculture and agriculture teacher education must move from "teaching basic computer skills" to "using the computer as an instructional tool".
7. Research findings in industry and the military may have implications for vocational agriculture learning environments.
8. FFA and SOE have potential as learning tools for handicapped students.
9. Inservice education should be designed to more effectively meet the needs of vocational agriculture teachers.
10. Agricultural education researchers should "coach" one another and learn to "wave their own flag" to improve research.
11. Beginning extension agents need help in setting work priorities to help reduce stress and potential burnout.
12. Beginning vocational agriculture teachers need help in recognizing "indicators of success" to promote job satisfaction.
13. Ways and means are needed to improve relationships between officers of state and national professional organizations and teacher educators and state supervisors.
14. Entry-year assistance is needed by beginning vocational agriculture teachers.

15. The time on task required to develop competencies is an important decision vocational agriculture teachers must make.

16. Agricultural education researchers should seek assistance from personnel with expertise in research design and statistics.

17. Dissemination of findings should be a part of each research project.

18. There have been major events and great leaders in agricultural education in the past. Some of the "greats" of tomorrow are in this room today.

19. University programs must be relevant to employment opportunities available to colleges of agriculture graduates.

20. The philosophy that has guided vocational agriculture programs and agriculture teacher education in the past may not be appropriate for the future.

21. Things just don't happen, people make things happen. You and I can make important agricultural education research happen in the future.

22. The use of "in house computerized data base searches" will result in better theoretical-based agricultural education research in the future.

23. The vitality of a profession depends upon the literature it produces.

24. Agricultural education is a profession in charge of preparing professionals.

25. Writing is difficult for most people, but many can write effectively if they develop a plan and make it a priority.

26. The place of adult/young farmer education in vocational agriculture must be decided by the profession in the near future.

27. Agricultural educators should consider alternative and innovative means for collecting research data.

28. Vocational agriculture teachers must be technically competent in the areas of agriculture they are expected to teach.

29. There are similarities between vocational agriculture programs in the U.S. and vocational agriculture programs in other countries.

30. As the shortage of vocational agriculture teachers becomes less critical, more attention should be given to quality and less to quantity in agriculture teacher education programs.

31. Data collection instruments should be carefully selected based upon the design for and objectives of the research.

Some of the above statements describe situations in the agricultural education profession while others identify challenges for researchers and practitioners. Research will be of growing importance in the agricultural education profession in the future.

I want to commend Dr. Willie Rawls for planning and directing this research conference. I also commend the paper presentors, the speakers, the reactors, the session presiders and the session facilitators for jobs well done. All of these roles are essential in conducting a successful research conference. The southern region is to be commended for its dedication to the improvement of vocational agriculture and agriculture teacher education through research. Keep up the good work!

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David L. Williams
Iowa State University

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5. Vocational agriculture curriculum guides should include both "what to teach" and "how to teach".
6. Vocational agriculture and agriculture teacher education must move from "teaching basic computer skills" to "using the computer as an instructional tool".
7. Research findings in industry and the military may have implications for vocational agriculture learning environments.
8. FFA and SOE have potential as learning tools for handicapped students.
9. Inservice education should be designed to more effectively meet the needs of vocational agriculture teachers.
10. Agricultural education researchers should "coach" one another and learn to "wave their own flag" to improve research.
11. Beginning extension agents need help in setting work priorities to help reduce stress and potential burnout.
12. Beginning vocational agriculture teachers need help in recognizing "indicators of success" to promote job satisfaction.
13. Ways and means are needed to improve relationships between officers of state and national professional organizations and teacher educators and state supervisors.
14. Entry-year assistance is needed by beginning vocational agriculture teachers.

EVALUATION SUMMARY

VIII

6

Summary of 1985 Southern Agricultural Education Research Conference

	SCALE							
	1 Very Well		2 Well		3 Fairly Well		4 Poorly	
Question(s)	N	%	N	%	N	%	N	%
Increased my effectiveness in the profession	2	9	11	50	9	41	0	0
Suggested ways to improve my work decisions.	2	10	9	43	7	33	3	14
Provided me with new insights	6	27	11	50	5	23	0	0
Helped me to see others points of view.	1	4	16	73	5	23	0	0
Helped me to fit together theory and practice.	1	5	7	37	9	47	2	10
Permitted me to give information to other people	2	10	5	26	12	63	0	0
Developed new interests for me.	5	24	9	43	6	28	1	5
Convinced me I need more opportunities like this.	6	28	9	43	5	24	1	5
Helped me to function in a group more effectively	1	5	8	38	11	52	1	5

Participants Summary Comments:

- Reactors did an excellent job
- General sessions and topics were timely and good
- Good participantion and audience received papers well
- Up to date with current research
- Publications seminar
- The reactors' speech

Participants Summary Comments (Con't)

- The paper presentations covered a wide variety of topics and research methods. This should be continued
- Numerous papers (perhaps a little too numerous)
- Night session
- Variety of papers presented
- Organization of conference
- Presentations were well prepared
- Use of A.V. aids
- Keynote address
- Most presentations were given in effective manner
- Quality of most research reports was very good
- Facilitators did a good job of keeping sessions on schedule
- Some of the research is very good
- Many fine papers were presented
- For the most part, reactors were well selected (with one obvious exception)
- Panel on writing for publication
- Paper presentations; recognizing best paper
- Presentation of papers; opportunity to interact with peers
- Overall quality of presentations and reactions
- Helped to highlight current research techniques and types of statistics that are in Vogue.
- Emphasis to be placed toward:
  - (a) Proactive directions
  - (b) Practical application
  - (c) Based on real needs and concerns
- More time for each paper
- Update session on research methodology
- Work to set up a regional research effort
- More time for discussants
- Closer screening to allow only good papers
- Continue having reactors to the research reports

Participants Summary Comments (Con't)

- Keynote address
- Implications of the new Perkins Act for Vocational Agricultural
- International research in Agricultural Education
- Research on merit pay program in Agricultural Education
- Have 2 or more sections on different research going at the same time
- Development of a research agenda for the Southern region
- Referree (SIC) the papers
- Decrease the number of papers presented
- Increase time allocated for presentations
- Publications seminar
- More on curriculum improvements
- Fewer papers, longer presentation time
- Referee process needs to be implemented
- More advance notice for discussants to receive papers earlier
- Consolidate the conference
- Start on Sunday
- Have concurrent sessions
- Papers need to get to reactors earlier
- Do not see the place of objective "j"
- Interesting papers in most cases
- Don't see necessity of $25 registration fee
- Only 2 breaks, Sunday AM & PM
- 40 registrants x $25 = $1000.00 ??
- Although keynotes was good -- let's reduce registration fee and have keynote from Southern Region
- Excellent organization and presentations and reactions
- Time 15 minutes too short to cover criteria for papers
- Almost all of the paper presentations were rushed or did not have enough time. Concurrent sessions may be necessary in order to provide enough time to report research findings and allow for reactions to the papers. Reactors should have the

papers at least one week prior to the conference. Their reactions could be typed and included in the conference proceedings.

. Reactors should give constructive criticism which can result in improved research. Most reactors did this, however, one or two criticized without supplying suggestions for improvement.

. Entirely too many papers; not enough selection of papers. The emphasis seems to be to select or permit any and all papers --- perhaps to build vitas --- not to put emphasis on quality research to enhance the profession.

. Give presenters more time to present their papers. Give each at least 20 minutes. Allow participant to ask each presenter questions for 3 minutes.

. Research reports must be sent to reactions much sooner than this year if quality reactions are expected. Reactors should not have to react to more than three papers. Would like to see 20 minutes allowed for presentations rather than 15 minutes, and perhaps fewer papers selected to be presented.

. Need fewer papers per session and more screening of papers. Registration fee was too high considering that we did not have quality refreshment breaks.

. Information on following items should be sent out sooner: registration fees, agendas, call for papers. Some criteria or referee procedure for paper selection is needed.

. Screen and reduce the number of papers. Some don't fit and are of questionable quality.

. Should have been Thursday and Friday after the Southern Agricultural Education Conference. The Saturday/Sunday routine is terrible.

Participants Summary Comments (Con't)

- Do a better job of advanced planning. Set the program and avoid last minute changes
- Need better allocation of time so discussants can perform; try not to start on Saturday evening; program needs to be set and not changed at last minute - this frustrates reactors! Thanks for the hard work in carrying out the conference.
- My first conference in Agricultural Education - very interesting.

BUSINESS SESSION

IX

MINUTES OF SOUTHERN AGRICULTURAL EDUCATION RESEARCH
BUSINESS MEETING
MARCH 25, 1985

Presiding, Willie J. Rawls
Secretary, John Crunkilton

1. Joe Kotrlik moved that the minutes of the last meeting be approved as distributed. Blannie Bowen seconded the motion. Motion carried.

2. Gary Moore moved that the Southern Agricultural Education Research Conference continue to recognize the outstanding paper presented during the conference. Max McGhee seconded the motion. Discussion followed on the type of award that should be given and that the criteria should be the same as that used at the National Research Conference in Agriculture Education.

   Byron French moved to amend the motion that a plaque be given to the presenter of the outstanding paper and that the Southern Agricultural Education Research meeting adopt the criteria used at the National Agricultural Education Research Meeting for the selection of the outstanding paper. Don Herring seconded the amendment. The amendment failed.

   Byron French moved to amend the original motion that the criteria used this year be used again next year and a plaque be given to the presenter of the outstanding paper. Gary Moore seconded. The amendment passed. Motion as amended passed.

3. John Crunkilton nominated Dr. Martin McMillion for Chairman-Elect of the Southern Agricultural Education Research Conference for 1986. Seconded and approved. Carl Beeman nominated Dr. Larry Arrington as Secretary for the 1986 Southern Agriculture Education Research Conference and this was seconded and approved.

4. Max McGhee moved that research conferences in the future follow this format.

   a. Each session be 1½ hour long.
   b. Three papers be presented allowing 20 minutes per paper, 20 minutes per discussant and 10 minutes for questions from the audience.

c. Four sessions be held.
d. Twelve papers maximum be presented.
e. Papers be refereed.
f. The final papers be sent to the chairperson one month before the conference and that three weeks before the conference, to the discussants.
g. The research session should start on Sunday and end with a lunch on Monday.

Joe Kotrlik seconded the motion. Motion failed. Joe Kotrlik moved to implement a refereeing process for the next Southern Agriculture Education Research Conference and that the refereeing process be left up to the discretion of the chairperson. Larry Arrington seconded. Motion carried.

5. Blannie Bowen, chairperson of the outstanding paper presentation committee, reported for the group and the outstanding paper went to Jimmy Cheek and Max McGhee from the University of Florida. The title of the paper was "Assessment of Competencies Possessed by Students Involved in Applied Principles of Agribusiness and Natural Resources Education.

6. Ideas for future Southern Agricultural Education Research Conferences offered were:
   a. that we consider a permanent secretary for the conference
   b. that we identify a sponsor from each state to help contribute to the cost of the conference.

7. Attendees were asked to return their evaluation forms.

8. There being no further business, Willie Rawls adjourned the meeting.

Respectfully submitted,

John R. Crunkilton
Secretary

ARTICLES OF AGREEMENT

SOUTHERN RESEARCH CONFERENCE IN AGRICULTURAL EDUCATION

ARTICLES OF AGREEMENT

ARTICLE I. NAME AND PURPOSE

The name of this organization shall be the Southern Research Conference in Agricultural Education. The general purpose is to:

1. Promote research and development in Agricultural Education in the Southern Region of the United States.
2. Provide, annually, a forum for presentation and discussion of research and development projects and proposals.
3. Provide communication among researchers in Agricultural Education within the region.
4. Have conference proceedings compiled by the host institution and distributed to each registered conference participant, and the ERIC System with a copy of the business meetings being distributed to each participant, each head teacher educator, and each head supervisor in the Southern Region.

ARTICLE II. MEMBERSHIP

Any person working in Agricultural Education within the region and interested in research and development relating to programs in Agricultural Education is eligible for membership in the conference.

No dues are charged. A registration fee, set by the Steering Committee, will be collected at the annual meeting to help defray costs of the conference and other expenses of communicating with members.

The Southern Region for this conference includes the following states and territory:

Alabama
Arkansas
Florida
Georgia
Kentucky
Louisiana
Puerto Rico
Mississippi
North Carolina
Oklahoma
South Carolina
Tennessee
Texas
Virginia

ARTICLE III. ANNUAL MEETING

The Chairman will be from the host state. The Annual Meeting will be held at a university, or a place chosen by the chairman of the conference, the host institution will be designated by the chairman. The place of meeting will be determined at least a year in advance.

The dates and length of the meeting will be determined by the Agricultural Education staff at the host institution, in cooperation with the Steering Committee of the Conference. The dates will be set and announced at least ten (10) months in advance.

The program for the Annual Meeting will be the responsibility of the Agricultural Education staff at the host institution, in consultation with the Chairman of the Conference. It is recommended that specific suggestions for the program be solicited from the membership in the region.

At least one Business Session will be scheduled and held during the Annual Meeting.

ARTICLE IV. OFFICERS

The officers of the Conference shall be as follows: Chairman, Chairman-elect and Secretary. The Chairman-elect and the Secretary will be elected at the Annual Meeting. (If a Chairman has not been elected previously this position will also be filled). The Chairman-elect will become Chairman for the following year. The Secretary may be re-elected. New officers will assume office when elected at the Annual Meeting.

THE DUTIES OF THE OFFICERS WILL BE AS FOLLOWS: The Chairman will (1) preside at all business meetings of the conference, (2) call meetings of the steering committee, (3) appoint committees. THE CHAIRMAN-ELECT will (1) preside at meetings in the absence of the Chairman. THE SECRETARY will (1) prepare minutes of business sessions, (2) compile proceedings of the Annual Meeting for publication by the host institution, and (3) preside at meetings in the absence of both the Chairman and Chairman-elect.

These three officers will serve as a Steering Committee for the Conference. They shall work with the host institution in planning the Annual Meeting and communicate with members as deemed desirable for promoting research and development in Agricultural Education within the Southern Region.

PROGRAM

THIRTY FOURTH ANNUAL
RESEARCH CONFERENCE IN AGRICULTURAL EDUCATION

SOUTHERN REGION
March 23 - 25, 1985
Sheraton Mobile
Mobile, Alabama

Saturday, March 23, 1985

4:00 P.M. Registration - Lobby Sheraton Mobile

FIRST GENERAL SESSION

Chairman - Willie J. Rawls
Fort Valley State College

Secretary - John Crunkilton
Virginia Polytechnic Institute and State University

Chairman Elect - Lamar Love
University of Arkansas

7:00 P.M. WELCOME - Bob Drake
Auburn University

OVERVIEW OF CONFERENCE - Willie J. Rawls
Fort Valley State College

FACILITATOR - Arthur Bell
North Carolina A&T University

INTRODUCTION OF SPEAKER - Carl Beeman
University of Florida

KEYNOTE ADDRESS - "Future Research Needs for Improving Vocational Agriculture and Agriculture Teacher Education Programs," David L. Williams, Professor and Head, Department of Agricultural Education Iowa State University

REACTORS - Jasper A. Lee, Professor and Head
Department of Agricultural Education
Mississippi State University

John Denmark, Program Director
Agribusiness and Natural Resources
Education
Florida State Department of Education

PAPER PRESENTATION - Problems Conducting, Implementing and Reporting Research in Agricultural Education, William Richardson and Michael Burnett, Department of Vocational Agricultural Education, Louisiana State University

Sunday, March 24, 1985

SECOND GENERAL SESSION

Presider - Carlton Morris
Tuskegee Institute

Facilitator - Jasper A.Hayles
Arkansas State University

Reactor - Gary E. Moore
Louisiana State University

8:30 A.M. PRESENTATION OF PAPERS

Assessment of Competencies Possessed by Students Enrolled in Applied Principles of Agribusiness and Natural Resources Education - Jimmy Cheek and Max McGhee, University of Florida

The Effects of Teaching Method or Student Characteristics on Achievement or Attitudes in an Agricultural Computer Programming Course - Tim Wiggins, Texas Tech University

The Effects of Temperature and Protective Clothing Upon Student-Perceptions of the Mechanics Learning Enviornment-Stanley Burke, Virginia Polytechnic Institute and State University

Variables Affecting the Achievement of Students Mainstreamed in Vocational Agriculture - Oscar B. Potter and J. David McCracken, Ohio State University

Louisiana Vocational Agriculture Teachers' Opinions of In-Service Training - Joe Kotrlik, Louisiana State University

10:00 A.M. BREAK

THIRD GENERAL SESSION

Presider -	Ira Hicks Fort Valley State College
Facilitator -	Larry Arrington University of Florida
Reactor -	Richard Baker Auburn University
10:30 A.M.	PRESENTATION OF RESEARCH PAPERS

Personal, Organizational and Job Factors as Related to Burnout Among Extension Agents in Ohio - O. Chris Igodan and L. H. Newcomb

Job Satisfaction of Vocational Agriculture Teachers in Louisiana - Thomas L. Grady, University of Wisconsin

State and National Officers' Opinions of State Supervision and Teacher Education in Agriculture - Joe Kotrlik and Mark Lelle, Louisiana State University

Vocational Agriculture Entry-Year Teachers' and Entry-Year Assistance Committee Members' Perceptions of the Oklahoma Entry-Year Assistance Program (HB1706) - Eddy Finley and Jerry Barbee, Oklahoma State University

An Experimental Study Involving Ninth Grade Vocational Agricultural Students in the Acquisition of Psychomotor Skills in Arc Welding Utilizing the Theory of Distributed Practice - Bob Drake, Auburn University

12:00 Noon LUNCH - Catered by Sheraton

Presider -	Joe Kotrlik Louisiana State University
Introduction of Speaker -	Charlie Reed Agribusiness Education Alabama State Department of Education
ADDRESS -	"Lighter Side of Agriculture," Alvin H. Holcomb, Agribusiness Education, State Department of Education

FOURTH GENERAL SESSION

Presider - Robert Terry
Oklahoma State University

Facilitator - Stanley Burke
Virginia Polytechnic and State University

Reactor - Ronald Brown
Mississippi State University

1:30 P.M. PRESENTATION OF RESEARCH PAPERS

Follow-up of College Agriculture Graduates at Oklahoma State University: 1979-1983 - David Drueckhammer, University of Southwestern Louisiana

Identifying the Most Important People in the History of Agricultural Education in America - William Camp and John Crunkilton, Virginia Polytechnic and State University

Identifying the Most Important Events in the History of Agricultural Education in America - William Camp and John Crunkilton, Virginia Polytechnic Institute and State University

Prosser, Snedden and Conflicts with Agricultural Education: An Historical Perspective - John Hillison and William Camp, Virginia Polytechnic Institute and State University

In House Computerized Data Base Searches - Joe Kotrlik, Louisiana State University

FIFTH GENERAL SESSION

Presider - Susan Everett
North Carolina State University

Facilitator - Prince Preyer
Alabama A&M University

Discussion by Participants

7:00 P.M. Writing for Publication of Textbooks and Manuscripts

Symposium: Jack Lee
Mississippi State University

John Crunkilton
Virginia Polytechnic Institute and State University

William Richardson
Louisiana State University

Monday, March 25, 1985

SIXTH GENERAL SESSION

Presider -	Bob Drake Auburn University
Facilitator -	Tom Curry University of Florida
Reactors -	Don Herring Texas A&M University

8:30 A.M. PRESENTATION OF RESEARCH PAPERS

On Research Methodology: The Cassette Tape as a Data Collection Medium - Gary E. Moore and Ismail Yahya, Louisiana State University

Land Grant or Non Land Grant University: Which Produces the Best Vocational Agriculture Teacher? - Cyril Ashiabaka and Gary Moore, Louisiana State University

Technical Animal Science Skills Taught in Vocational Agriculture Classes and Possessed by Illinois Agriculture Production Teachers - Jim Flowers and Ed Osborne, University of Illinois

Agriculture and Horticulture in the Secondary Schools of the Southern Education Region of New Zealand - Martin McMillian, Virginia Polytechnic Institute and State University

10:00 A.M. BREAK

10:30 A.M. Summary Remarks and Challenges

David L. Williams
Iowa State University

11:00 A.M. Business Meeting

LIST OF CONFERENCE PARTICIPANTS

LIST OF PARTICIPANTS

STATE	NAME AND INSTITUTION
ALABAMA	Richard Baker AUBURN UNIVERSITY
	James B. Drake AUBURN UNIVERSITY
	Henry Findlay TUSKEGEE INSTITUTE
	A. Richelieu Mitchell TUSKEGEE INSTITUTE
	Carlton Morris TUSKEGEE INSTITUTE
ARKANSAS	Jasper Hayles ARKANSAS STATE UNIVERSITY
FLORIDA	Larry Arrington UNIVERSITY OF FLORIDA
	Carl Beeman UNIVERSITY OF FLORIDA
	Tom Curry UNIVERSITY OF FLORIDA
	John Denmark STATE DEPT. OF EDUCATION
	Byron T. French UNIVERSITY OF FLORIDA
	Chris Igodan PALM BEACH COUNTY SCHOOL SYSTEM
	Max McGhee UNIVERSITY OF FLORIDA
	Oscar B. Potter PALM BEACH COUNTY SCHOOL SYSTEM

LIST OF PARTICIPANTS

STATE	NAME AND INSTITUTION
GEORGIA	Ira Hicks FORT VALLEY STATE COLLEGE
	Willie J. Rawls FORT VALLEY STATE COLLEGE
IOWA	David L. Williams IOWA STATE UNIVERSITY
ILLINOIS	Jim Flowers UNIVERSITY OF ILLINOIS
LOUISIANA	Mike Burnett LOUISIANA STATE UNIVERSITY
	David Drueckhammer SOUTHWESTERN LOUISIANA
	Lew L. Groh LOUISIANA STATE UNIVERSITY
	Joe Kotrlik LOUISIANA STATE UNIVERSITY
	Mark Lelle LOUISIANA STATE UNIVERSITY
	Gary Moore LOUISIANA STATE UNIVERSITY
	Gaylon Parton LOUISIANA STATE UNIVERSITY
	Bill Richardson LOUISIANA STATE UNIVERSITY
	Ledell D. Virdure SOUTHERN UNIVERSITY

LIST OF PARTICIPANTS

STATE	NAME AND INSTITUTION
MISSISSIPPI	Blannie Bowen MISSISSIPPI STATE UNIVERSITY
	Ronald Brown MISSISSIPPI STATE UNIVERSITY
	Danny Cheatham MISSISSIPPI STATE UNIVERSITY
	Jasper S. Lee MISSISSIPPI STATE UNIVERSITY
NORTH CAROLINA	Arthur P. Bell NORTH CAROLINA A & T UNIVERSITY
OKLAHOMA	George Cook OKLAHOMA STATE UNIVERSITY
	Robert Terry OKLAHOMA STATE UNIVERSITY
TENNESSEE	Edwin E. Lamberth TENNESSEE TECH UNIVERSITY
TEXAS	Don Herring TEXAS A & M UNIVERSITY
	Tim Wiggins TEXAS TECH UNIVERSITY
VIRGINIA	Stanley Burke VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

LIST OF PARTICIPANTS

STATE	NAME AND INSTITUTION
VIRGINIA	John Crunkilton VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
	Jordan Hudson VIRGINIA STATE UNIVERSITY
	Martin B. McMillian VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY